

INSIDE: EVENING THE ODDS WITH LONGBOWS AND MUZZLELOADERS

Montana Outdoors

MONTANA FISH, WILDLIFE & PARKS | \$4.50 SEPTEMBER-OCTOBER 2024

BEHOLD the BROWN

Up close with
Montana's most
resilient trout

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LIMPING THROUGH THE OUTDOORS
IS THIS AN UPLAND BIRD BOOM YEAR?
PRONGHORN TERIYAKI, GRUNGE-STYLE
CONFessions OF A NEW HUNTER ED INSTRUCTOR

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OLD SCHOOL Two hunters haul out a whitetail buck taken on state land in Fergus County with a longbow. See page 32 to learn why a small but growing number of archers are going back to the basics. Photo by Lori Thomas.

COVER Is the non-native brown trout the hope for Montana's warmer trout fishing future? Learn all about these European natives starting on page 12. Photo by Brian Grossenbacher.

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Odd white calves

Our family loves your special “working lands” issue (May-June) and all the information it has on Montana farms and ranches. We have a question: On pages 32-33 there is a photo showing a herd of black cows with cream-colored calves. How is that possible?

Brenda Hansen
Billings

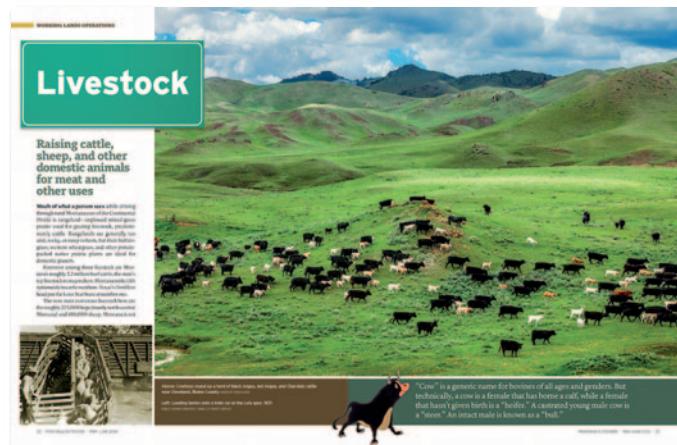
Editor replies: According to Dr. Megan Van Emon, associate professor with the Montana State University Animal and Range Science Department, black Angus cows will produce white or gray calves when bred with Charolais bulls, which are white. Some stockgrowers favor that cross because it produces calves that put on more weight and require less feed for pound of weight gain, Van Emon says.

More kudos

We wanted to express our gratitude for doing a publication on Montana’s working lands. The editor’s introduction and background chapters were especially enlightening and appreciated. My family and I have been ranchers in Cascade County for many years. We know how to conserve the land by identifying the various plants and soil types in order to appropriately manage our grazing practices and fight invasive weeds. Many people don’t realize the effort that goes into conserving natural resources, and we appreciate that you shed light on the efforts of so many people across diverse industries.

Merrill McKamey and Family
McKamey West Ranch, Great Falls

Congratulations on an especially outstanding issue of *Montana Outdoors* (May-June). It’s such an interesting, readable, and useful guide to rural life in Montana. My husband and I have subscribed to your magazine since the early



1990s and have always enjoyed it. And this latest issue stands out as one of the very best. As a retired teacher, I can see it being used in classrooms across Montana to teach young Montanans, especially those who live in the bigger cities, about the essential history, economy, and culture of our state.

Patti Eldredge
Victor

“As a retired teacher, I can see it being used to teach Montana’s essential history, economy, and culture.”

I just completed reading the May-June issue of your fine magazine. What a pleasant surprise. It’s everything I ever had questions about and more. I am an Arizona native who has spent time in Montana’s fabulous national parks, out hunting and fishing, and otherwise enjoying your beautiful state. I’ve always dreamt of moving to Montana, and this made me feel closer to it.

Ray Scarla
Phoenix, AZ

Thank you for the amazing May-June issue! I have enjoyed it immensely and I have learned so much. I now want to find ways to get more involved in MSU Extension or find other ways to keep learning more about these topics.

Alex Isern
Bozeman

Hats off to you and your crew on the incredible quality of the May-June issue. I believe this is the most informative issue I have seen in the 18-plus years I have been reading your magazine. Well done!

Bob Sanders
Manager of Conservation Programs
Montana Ducks Unlimited, Elliston

I thoroughly enjoyed reading “A Driver’s Guide to Montana’s Working Lands” issue of *Montana Outdoors*. Congratulations to the team that worked on it! I think a new section or article in every edition would be a wonderful addition to the magazine. Whatever you do, keep up the great work.

Mark Stinson
Twin Bridges

Pay to play

In response to the letter in your May-June issue about non-resident hunting licenses being too expensive. About all I have to say to that writer is that you have to

pay to play to use our Montana resources. He had the right answer years ago when he said he wanted to move to Montana. That’s what I did back in 1998. We actually bought land here in 1978, and it took 20 years to figure out how to move here for good with my wife and two kids. Makes us laugh about it all, but it was the best thing we ever did.

Bill Bourgeois
Ennis

Yes, get kids outdoors

As a retired superintendent of schools, I am once again impressed by your keen insight and open-eyed approach to what FWP offers all who participate in our great outdoors (July-August issue Sketchbook, “Paying attention”). I believe as you do that the crush and pressure to click on social media is taking a negative toll on us all. I am a volunteer New Jersey Fish and Wildlife fishing education instructor throughout the year and have experienced firsthand the positive effect of getting kids out fishing or hiking or just observing what nature has to offer.

Nick Brown
Little Falls, NJ

Address the elephant

Your July-August story on “hoot owl” restrictions (“Giving a Hoot”) was commendable, but it doesn’t address the elephant in the room. To prevent the inevitable collapse of the fisheries, something must be done about the overcrowding by commercial and private drift boats on area rivers. FWP needs to regulate numbers and days allowed on rivers like the Madison, where I have fished each year since 1959. Revenue for commercial operators will be affected, but the long-term consequences of not acting will be much worse.

Tom Rahn
Greenville, CA

Seattle-style Pronghorn Teriyaki

By David Schmetterling | Preparation time: 20 minutes | Cooking time: 10 minutes | Yield: 4 servings



I lived in Seattle for a few years in the early 1990s—the era of Nirvana, flannel shirts, Ken Griffey, Jr., early Starbucks, and delicious food. One of my favorite dishes was served in the teriyaki shops that were in nearly all neighborhoods. For not much money, you could get a mound of steamed rice topped with the glistening sliced teriyaki meat of your choice along with a small Japanese green salad.

Years later, I ended up visiting Japan several times to visit my brother-in-law, who was teaching English there. I ate my way through that country but never experienced the same flavor of teriyaki as when I lived in Seattle. I later learned that “Seattle-style” teriyaki comes from a combination of garlic and ginger developed in the Pacific Northwest by Japanese immigrants.

The word “teriyaki” comes from *teri*, Japanese for “glaze,” and *yaki*, meaning “grilled.” Most recipes use brown sugar or mirin (sweet rice wine) to produce the glaze, but I use Montana honey. I tried to replicate that Seattle-style marinade from memory, and don’t know if I got it right, but I really enjoy this simple recipe and have been preparing it to much acclaim from friends and family members for years. ■

—David Schmetterling, FWP fisheries research coordinator, lives in Missoula.

PHOTO OF BEEF TERIYAKI: SHUTTERSTOCK

INGREDIENTS

1 to 2 pounds pronghorn steaks
(or elk or deer)

Marinade

$\frac{1}{2}$ c. soy sauce
 $\frac{1}{2}$ c. vegetable oil
 $\frac{1}{4}$ c. honey
2 T. rice vinegar
1 medium onion, minced
2 to 3 large cloves of garlic, minced
1 T. ground ginger

Garnishes

1 bunch of green onions (scallions),
sliced thin

Toasted sesame seeds

Wasabi* (a green paste that tastes similar
to horseradish)

Furikake* (a nutty-salty-savory-seaweed-y
Japanese flavoring)

* Available in the Asian food sections of major
grocery stores or online

DIRECTIONS

Mix all marinade ingredients in a small bowl. In a shallow container, pour marinade over steaks to cover all sides. Place in the refrigerator to marinate for at least 12 hours and up to 24, turning the meat a couple of times.

Grill steaks over high heat for about 4 minutes per side (turning once) for medium rare. Remove from heat and allow to rest for 5 minutes.

Thinly slice the steaks and serve atop a mound of steamed rice on each plate. Top slices with toasted sesame seeds, soy sauce, sliced green onions, a hefty sprinkle of furikake, and a dollop of wasabi.



More recipes from
Montana Outdoors

Thanks, landowners, for the water

As you drive over bridges this time of year, take a moment to look down at the streams and rivers and appreciate just how much water is flowing down there.

I know: Late summer is when water levels in streams and rivers are at their lowest. By now, crops have been irrigated for several months, snowpack is gone, and it seems like a long time since we last saw a decent rain.

But Montana's water flows could be a lot worse.

Here at FWP, we talk a lot about the contributions that agriculture makes to *wildlife* habitat—rotational grazing that keeps grasslands healthy, wetlands protected from unnecessary drainage, prairie lands left unplowed, and residual grain and alfalfa that help sustain wildlife through the winter.

But landowners do a lot to conserve *fish* habitat, too. Many river systems in this mostly parched state would have a lot less water if not for conservation-minded farmers and ranchers.

Yes, it's true that some ag operations take every last drop of water they are legally entitled to from streams and rivers. But many others care about fish and lean in to donate water for the common good.

In some cases, that conservation is part of a formal agreement, like those between the U.S. Fish & Wildlife Service and landowners in the Big Hole River watershed who are helping keep Arctic grayling off the federal endangered species list. Sometimes it's part of a drought-management plan that groups like the Blackfoot Challenge establish with area ranchers and farmers. In many cases, it's simply a personal decision by an ag producer to carry on their family's long tradition of doing what's right for a stream or river.

For trout, some of the most critical water conservation results

from instream flow leases purchased by FWP, Trout Unlimited, and the Clark Fork Coalition. In these legal agreements, willing landowners temporarily leave a certain amount of water in key spawning tributaries. Sometimes just maintaining a few extra cubic feet per second is enough to maintain connectivity between the upper reaches where fish spawn and the mainstem river with no dry spots in between. That allows trout to make their way downstream without getting stranded in shallow pools, where they become easy prey for predators.

Another trout-friendly innovation we are working on with landowners is changing what's known as "points of diversion." Through these agreements, subject to approval by the state Department of Natural Resources and Conservation, participating landowners irrigate with warmer water from a mainstem river instead of drawing from tributaries, which can be considerably cooler.

Hayfields don't need water that's chilled, but trout sure do.

Most of these water-saving efforts come about thanks to solid relationships built between private landowners and the staff of FWP, conservation nonprofits, federal agencies like the Natural Resources Conservation Service, and local Soil and Water Conservation Districts.

These partnerships can't do anything to make more snow or rain. But we are all working together to find new, innovative ways to retain more of the precipitation that does fall. And we are focusing that work on stream stretches where water savings do the most good for Montana's trout populations, while still providing sufficient amounts for the crops that sustain the state's ag families and economy.

—Dustin Temple, Director, Montana Fish, Wildlife & Parks



JOHN LAMING

The upper Yellowstone River in Paradise Valley. Water conservation by many landowners helps the blue-ribbon river support trout even in drought years.



NICHOLAS DANIELSON/MONTANA FWP

SNAGGING SLEUTH

DAWSON SCHOTT

FWP Fisheries Technician, Havre

THERE AREN'T MANY JOBS where you get paid to go fishing—or in this case, snagging—but mine is one of them. This shot is of me trying to snag a paddlefish on the Missouri River near the James Kipp Campground. The work is part of an FWP study looking at paddlefish behavior and survival after they are snagged and released.

FWP holds a lottery each spring for limited tags allowing winners to snag and harvest a paddlefish. The department also has unlimited tags available for people who just want to snag a paddlefish and then release it.

We want to learn what happens to the released fish, so several of us with FWP snag paddlefish and then attach radio tags so we can follow them. We're finding that the fish usually head downstream a few miles to a deep pool, recover for a few days from being caught, and then continue upstream to spawn. So far, mortality appears to be low, and the fish continue to exhibit a strong desire to move upstream to spawn.

In addition to the paddlefish work, I also help with fall

young-of-the-year fish seining (small-mesh sampling) on Fresno Reservoir; repair nets; do creel surveys on anglers; sample small and large reservoirs within Hill, Blaine, and Phillips counties; and survey fish in prairie streams.

This job is a dream come true. I grew up on a small farm in eastern Iowa, where my family had 32 acres with a 12-acre pond. That's where I learned to fish and developed a love for all things related to fish. I got a bachelor's of science in fisheries management at Iowa State University and then landed an FWP technician position in Glendive. After taking a few years off to go home and help my ailing parents, I returned to Montana—this time finding an FWP position based in Havre.

It's great working in central Montana because I'm not really a trout guy. My love is coolwater fish species, and when I'm not working on the water, I'm fishing for walleye, northern pike, or tiger muskies. I haven't caught a tiger muskie yet—I see why they call it the fish of 10,000 casts!—but I think it will happen sometime this summer. 

SNAPSHOT



Missoula-based photographer **Laura Verhaeghe** and a friend were driving north of Polebridge past Big Prairie near the North Fork of the Flathead River when they spotted this mother grizzly and her two cubs.

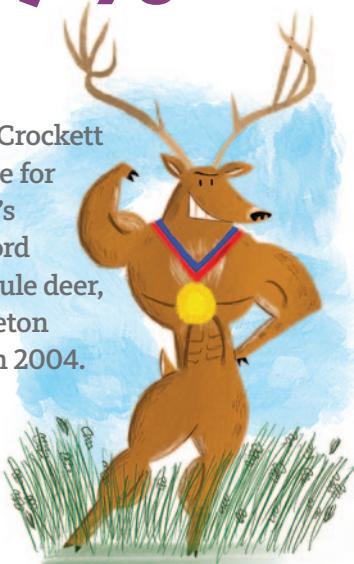
"What I like about this photo is that it keeps its distance from the bears and shows them in their habitat, like if you were hiking and saw them out there in the prairie," says Verhaeghe, grants manager for the Rocky Mountain Elk Foundation. "I also like the simple layers of tan, green, dark blue, and light blue in the background. You wouldn't have seen that if I'd used a longer lens to get a closer shot of the bears."

Verhaeghe adds that just before seeing the bear family, she had remarked that she almost never sees grizzlies on the west side of the park. "Then we came around the corner, and there they were. I wish that trick worked all the time." ■



207 1/8

Boone & Crockett Club score for Montana's state record typical mule deer, shot in Teton County in 2004.



Montana Outdoors takes gold, silver, and bronze at national competition

Montana Outdoors won several awards in the national Association for Conservation Information's 2023 competition held on July 25 in Arlington, Virginia:

- ▶ 1st place Fisheries Article category ("Read Our Lips")
- ▶ 1st and 3rd place General Interest Article category (respectively, "What's That Animal Called?" and "The Queen City's Ride to the Top")
- ▶ 2nd place Wildlife Article category ("Ready for the Handoff")
- ▶ 2nd place in the Overall Magazine category (1st went to archrival Texas Parks & Wildlife).
- ▶ FWP also won 3rd place in the Recurring Video Program category.

Formed in 1938, the ACI is a national nonprofit organization of communicators working for state, federal, and private conservation agencies and organizations. ■



The special hunting weekend is meant to give young hunters a better chance at success.

HUNTING

Youth-only pheasant and waterfowl hunting weekend

On September 21-22, young hunters will be able to hunt pheasants, ducks, mergansers, geese, and coots statewide. The two-day hunt is open to legally licensed 12- to 15-year-olds who have completed hunter education and are accompanied by a nonhunting adult at least 18 years old. Also eligible are certified and legally licensed apprentice hunters age 10 to 15 years accompanied by a nonhunting adult "mentor" at least 21 years old.

The regular waterfowl season opens this year on September 30 and the regular pheasant opener is October 12.

While the youth hunting weekend has been around for several years, the 2024 event will be the fourth consecutive year that includes pen-reared ring-necked pheasants. The birds are part of a pheasant stocking program created by the 2021 Montana Legislature, which authorized FWP to use up to \$1 million each year to stock the popular upland game birds raised at the Montana State Prison near Deer Lodge on suitable habitat on publicly accessible lands.

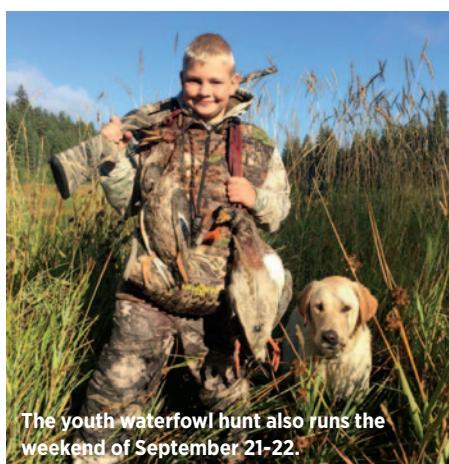
FWP crews will release pheasants at selected sites a few days before the youth hunts.

Agency officials say the youth weekend gives young hunters a chance to experience hunting success, encouraging future participation. Studies show that hunters who harvest game when they start out are more

likely to continue the activity as they grow older. Lack of early success leads to high drop-out rates.

As in years past, local sporting goods stores and other businesses will join FWP in holding kickoff events across Montana before the weekend hunts. Depending on the location, young hunters and supervising adults will be treated to barbecues, dog-training demonstrations, shotgun shooting opportunities, and raffles for outdoor gear.

Kickoff sites, dates, and times had not been made final when this issue of *Montana Outdoors* went to press. Interested kids and parents should visit the FWP website or call regional offices in early September for the latest information. ■



The youth waterfowl hunt also runs the weekend of September 21-22.

Devices disrupt grizzly dining plans

It's difficult to move harvested wheat, barley, and other grain in and out of storage bins without spilling some on the ground. Spilled and discarded grain has long attracted pigeons and mice, but in recent years the wheat and barley have also been drawing grizzly bears, especially to ranches and farms along the Rocky Mountain Front.

To keep bears from hanging around homes near grain bins and causing problems, FWP biologists have been testing inexpensive scare devices. "Scare devices are a cheap and easy solution to a lot of complaints," says Wesley Sarmento, who, as an FWP grizzly bear management specialist, conducted a study on the effectiveness of combinations of electronic sirens, alarms, and flashing lights that turn on when sensors detect motion near spilled grain.

"They can prevent bears from coming back about half of the time, and that means people don't have to clean up thousands of pounds of wasted grain, which is often not worth their time," says Sarmento, who recently left FWP to take a new job with the Blackfeet Tribe and Glacier National Park.

Farmers sometimes inadvertently spill grain while loading large amounts onto trucks or trains, Sarmento says. FWP staff help chase off bears and clean up or secure grain, but big spills can take a few days to finish. During that time, bears attracted by the smell of grain may move in and gorge themselves on the mounds of calorie-rich food.

When bears refuse to leave areas near people, the chances of dangerous encounters increase, so the animals are usually



Grizzly bears are an increasingly common sight near grain bins in north-central Montana.

trapped and then either translocated or euthanized. Due to federal protections on grizzly bears and the scarcity of relocation sites—backcountry habitat is now full of bears—Sarmento and his team experimented with using scare devices to move grizzlies away from grain and people.

From 2019 to 2021, they deployed devices on 21 Montana farms that reported bears eating grain from recent spills.

Sarmento's study, recently published in the *Journal of Wildlife Management*, found that scare devices that weren't waterproof sometimes malfunctioned after rain. The researchers also found that battery-operated devices died quickly. Another finding was that landowners tended to turn off devices that didn't have a silent day mode, since the alarm features would go off when workers moved past, and they could then forget to turn them back on at night.

The most effective devices were solar-powered and waterproof and contained timers set to automatically turn on at night. Devices with these features averaged only \$17 apiece and were easily purchased online.

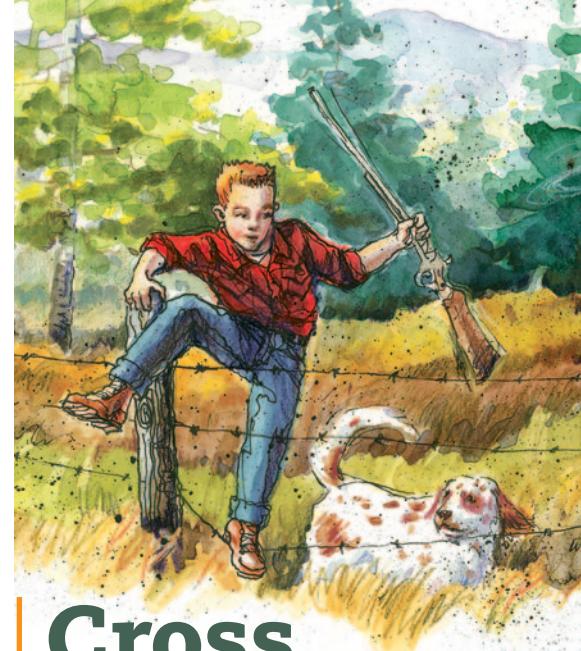
The researchers—who also set up trail cameras around the devices to determine whether they actually chased away bears—found that the devices reduced the likelihood that bears would reach grain spills by 46 percent. Sarmento says the gizmos were less likely to scare bears traveling in groups than individual bears, and were better at deterring bears when natural food sources were abundant on the landscape.

While Sarmento says current iterations of scare devices are still "rudimentary," they seem to provide an affordable and easy way to deter some bears from grain spills and likely could also work at bee yards, orchards, garbage cans, and other attractants that draw bears close to people. ■

PHOTOS: MONTANA FWP; ILLUSTRATION BY NORA WILDGEN



Solar-powered scare devices installed to deter grizzlies from spilled grain near a bin.



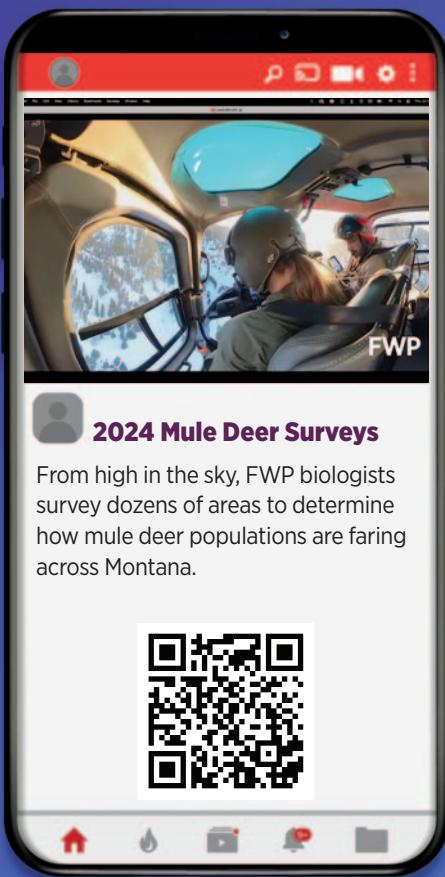
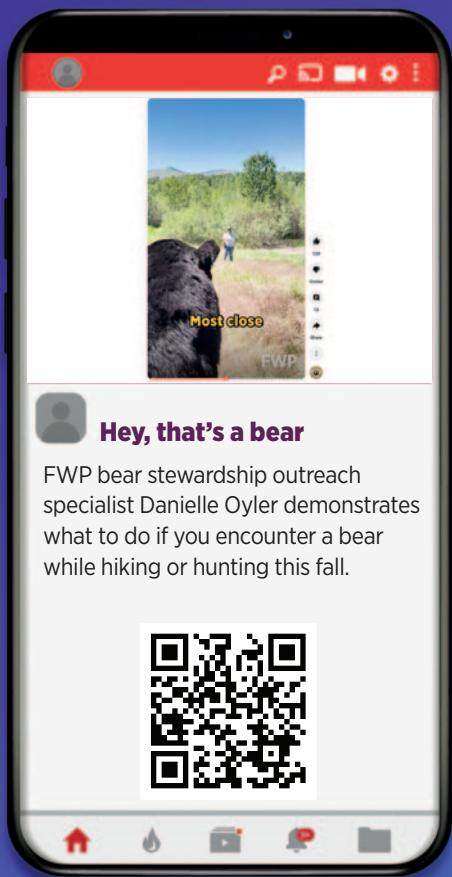
Cross fences with care

One of the most dangerous places for hunters is atop a barbed-wire fence. The wiggly wires are unstable, and the barbs catch on pants legs. Crossing a fence with a loaded shotgun or rifle is one of the most common ways hunters injure themselves or others waiting to cross.

To cross a fence safely when hunting alone, lay your unloaded firearm on the ground under the fence, cross, then pick up your firearm.

When with others, first unload your firearms. The first person to cross the fence hands their firearm to the second person, making sure both muzzles are pointed up. The second person then hands both firearms over the fence to the first person. The second person then crosses the fence safely. ■

FWP SOCIAL MEDIA SHOWCASE



LOOKALIKES *Tips for differentiating similar-looking species*

Because it's illegal to shoot a hen pheasant, upland bird hunters need to be able to distinguish them from similar-looking sharp-tailed grouse on the wing.

One trick is to listen: Sharptails make a *kuk-kuk-kuk*

sound when they flush, while hen pheasants remain silent.

Another is to look for the sharptail's mottled white breast and white markings on its wings. A hen pheasant is mottled tan with almost no visible white when aflight. ■



Ventenata

What it is

Ventenata is the most recent noxious weed to invade Montana—this time from Idaho, Washington, and Wyoming (unlike most invasives, which arrive from Eastern states). Also known as wiregrass, this spindly winter annual with scrawny stems grows 6 to 18 inches tall and thrives in open disturbed areas and along roadsides, creating what look like parched overgrown weed patches having a bad hair day.



Where it's found in Montana

Most ventenata is in the counties bordering Idaho and Wyoming, where it's taking over moist areas of grasslands, shrub steppes, woodlands, open forests, pastures, hayfields, and croplands.

Why we hate it

This noxious weed crowds out native vegetation. Because it contains silica, wildlife won't eat it. It can also reduce forage available to livestock by 70 percent and reduce crop yields on ag land. The plants increase fire risk because, like the equally loathsome cheat-

LIZ BRADFORD

grass, they dry out long before native and domestic perennial grasses do and sit there like tinder waiting to ignite from lightning or rail car sparks.

How it spreads

A winter annual, ventenata emerges in the fall, overwinters as a seedling and resumes growth in the spring before desired native vegetation sprouts, and then matures early in the grazing season. Each ventenata plant produces up to 35 seeds, which spread via recreation vehicles, hikers, and pets, and as farmers and ranchers move hay and livestock from infested fields.

How to control it

Hand pulling works with small infestations of less than a few square yards. Mowing can in some cases help prevent seed production. Herbicides like indaziflam, imazapic, and glyphosate show some promise. Proper seed-cleaning protocols and equipment cleaning practices can significantly reduce the unintentional spread of this invasive grass.

If you see what looks like ventenata, report it to Jasmine Chaffee, Montana Department of Agriculture Noxious Weed Program manager, at 406-444-3140. ■

THE MICRO MANAGER

A quick look at a concept or term commonly used in fisheries, wildlife, or state parks management.

“Habitat fragmentation”

To survive and thrive, wildlife need to live where they can find food, raise their young, escape predators, survive winter, and fulfill other survival requirements. These places are known as habitat. One of the biggest threats to habitat—and the wildlife living there—is fragmentation.

Fragmentation happens when habitats are cut into smaller pieces. A common example is a new road built through a grassland or forest. Though the road's physical footprint is relatively small compared to the area it cuts through, the harm to wildlife populations can be enormous.

For most wildlife species, the smaller the habitat parcel, the harder it is to survive. Small animals may be unable to cross a road to reach water or breeding areas. Larger animals might shy away from a new road and traffic, disrupting their ability to migrate. Fencing, housing, mining, and oil and gas drilling also can break up habitat.

Some carnivores such as red foxes and skunks thrive in fragmented habitat, because it offers more “edge cover” they can patrol in search of ground-nesting birds and small mammals. But sometimes even these predators suffer as their prey base declines. ■



New roads break large expanses of habitat into smaller parcels that many wildlife species struggle to use or access.

SHUTTERSTOCK

The Education of a Hunter Ed Instructor

Contributing to a legacy by teaching beginners how to hunt safely and ethically.

By Tom Kuglin





JUST LIKE THIS With a senior instructor looking on, the author (left) demonstrates how to properly hold a rifle when in the seated position. Becoming a certified FWP Hunter Education instructor requires several hours of training and study, passing a written test, and teaching new hunters about safety and ethics. One of the rewards, say participants, is the feeling that they are taking part in a long Montana tradition of helping cultivate safe and appropriate hunter behavior. PHOTO BY THOM BRIDGE

Iwalk to the front of the class, firmly gripping the inert dummy shotgun as 40 pairs of eyes watch me.

“Does anyone know what type of shotgun this is?” I ask. A dozen hands go up, and I point to a girl in the second row.

“A pump-action,” she answers excitedly.

“You’re right,” I reply. “And who plans to hunt with a pump-action shotgun this year?”

About half the students raise their hands.

“Well, then this is a good firearm to talk about.”

I work the action, point out the location of the safety, ask the class if they knew the purpose of a “plug,” and explain how to change chokes. While surely not the most comfortable public speaker, I’d spent a lifetime learning this subject matter, and, to my surprise, instructing a group of aspiring hunters came naturally. The students’ enthusiasm for the topic helps my confidence. They want to be there and want to hear what I and my fellow orange-vest-clad instructors have to say.

With my shotgun knowledge spent, I head to the side of the room, hearing “Good job” from one of the veteran instructors as I take a spot against the wall. The classroom feels familiar, like the one I sat in nearly three decades ago as a student with hunting aspirations of my own. The Montana Fish, Wildlife & Parks Hunter Education Program course still stresses safety, responsibility, and ethics, along with the joy of seeing wildlife and spending time outdoors. As the next instructor explains how a bolt-action rifle works, I can’t help but hope that these students are beginning a lifelong pursuit, that hunting would become for them, as it is for so many of us, the reason they choose to call Montana home.

I am well on my path to becoming a certified Montana Hunter Ed instructor.

BORN OF TRAGEDY

The Montana Legislature began requiring young aspiring hunters to take a state safety

Tom Kuglin, an editor at Bugle, the magazine of the Rocky Mountain Elk Foundation, was previously an editor at the Independent Record. He lives in Helena.

class in 1957, after several highly publicized hunting-related accidents the previous fall created public outcry. Similar requirements that began the same time in other states helped reduce hunting accidents and fatalities in Montana and nationwide.

Sixty-seven years later, eager young hunters are still taking classes live or online to learn about firearm types, shooting skills, and how to safely cross a fence while hunting. They also receive instruction on wildlife and habitat management, hunting ethics, landowner relations, and outdoor skills.

Today, volunteers teach and certify roughly 7,000 Hunter Ed, 3,000 Bowhunter Ed, and 200 Trapper Ed students each year.

Francis Reishus, FWP’s Outdoor Skills Program manager, tells Hunter Education instructors they are “the gatekeepers.” It’s through them, he explains, that many young hunters get their first—and often most lasting—impression of the importance of safe firearm handling, cautious shooting, and

ethical behavior. “I’m enthused by the passion that our instructors bring, because they care so much and want this program to be successful,” Reishus says.

Montana’s hunter, bowhunter, and trapper education programs have faced several recent challenges. The COVID pandemic increased the number of people heading outdoors, including those wanting to hunt and trap. Meanwhile, FWP has been working to balance the convenience of its online hunter education classes (begun in 2009 for adults only and expanded to youth during the COVID years) with the demand by many instructors and hunters that at least some of the instruction be in-person. The department now requires that new hunters under 18 pass a one-day in-person field course in addition to their online test.

Though students can still take a mostly online class, interest in in-person classroom courses is outpacing availability. That’s because the volunteer-based programs saw instructor numbers dramatically decline during COVID, from 1,200 in 2019 to only 800 by 2023.

WHAT IT REQUIRES

I grew up traveling to the farthest reaches of Montana while bird hunting with my dad. Over the years, hunting has been central to my friendships, outdoor adventures, and even eventual career as an outdoor writer. Still, I never gave much thought to volun-



HANDLE WITH CARE Hunter Ed students use dummy rifles that can’t shoot to learn the proper way of holding the firearm and keeping the muzzle from pointing toward another person.

teering as an instructor. It always seemed like something taught by retirees with extra time and wisdom, not someone in their early 40s with a young family and more commitments than free time.

But I've long felt a responsibility to help the next generation—like my two young sons—enjoy wonderful hunting opportunities like I've had. After hearing that the program's volunteer force had declined so drastically, I decided to help.

My wife supported the idea, and soon I filled out an application. After passing a background check, I received a welcome packet from FWP thanking me for my willingness to volunteer and providing training instructions. I learned the details of Montana's Hunter Education Program over the next couple of weeks, and then took and passed a quiz. After all, it's only fair that if we're going to test the students, we instructors should prove we know the material.

When my orange vest and name tag emblazed "Instructor #K272" arrived in the mail, I was excited to head to the classroom.

Before I helped teach my first class, I received additional training from senior volunteer instructors on classroom organization, instructional techniques, and learning styles. I also boned up on the history of hunter education and the critical role hunters play as conservation funders and wildlife stewards. I then attended a regional training session, where Reishus spoke enthusiastically of the time and effort volunteers put in and the importance of growing the volunteer ranks to offer classes that certify thousands of students each year.

WHAT IT GIVES

For the past 20 years, Vivaca Crowser, FWP's regional Communication and Education Program manager in Missoula, has led similar regional training sessions. "I love this part of my job because it's such a fun community to be part of," she says. "It's a dedicated group of people who are willing to work through changing times, changing programs, and the challenge of providing enough classes to serve the demand and pass on something that's so important to them."

Instructors volunteer for a variety of reasons, Crowser says. Some sign up after a person they know was in a firearm-related accident. Others want to give back to a heritage they believe in. Others come from a family legacy of instructors and want to carry on the tradition.

I love this part of my job because it's such a fun community to be part of."

FWP regional Communication and Education Program manager Vivaca Crowser congratulates a Hunter Ed instructor for his 20 years of volunteering.

Raised in Great Falls, Caleb Toth grew up with a father and older brother who were instructors. When he passed the Hunter Education course at age 12, Toth became a junior instructor. Seventeen years later, Toth continues to teach from Helena.

"When I started out as a junior instructor, it was really something exciting to do at that age," he says. "Now that I've done it for so long, I was telling my wife that it feels like a duty. It's a passion for me now because it seems like all too often, this is the only place kids will hear about ethics and hunter responsibility, and I feel like I can make a difference."

Toth also enjoys the energy that young students bring to the Hunter Ed Program and seeing their evident pride when they receive their certificate—a rite of passage for many Montanans.



Hunter education in Montana has undergone a number of evolutions:

- ▶ **Late 1940s:** Montana begins offering voluntary hunter safety classes.
- ▶ **1957:** Montana Legislature makes it mandatory for hunters under age 18 to graduate from a hunter education course.
- ▶ **1970:** Federal Pittman-Robertson funding becomes available to provide a financial boost to state Hunter Ed programs.
- ▶ **1987:** At the urging of the Montana Bowhunter Association, the Montana Legislature requires mandatory bowhunter education for youth age 12 to 17 starting in 1988.
- ▶ **2009:** FWP initiates its first online Hunter Ed option.
- ▶ **2016:** Lawmakers pass Montana's Apprentice Hunter Program, which allows hunters as young as 10 to hunt with a mentor. FWP responds by lowering the age for attending the Hunter Ed course from 12 to 10.
- ▶ **2021:** The Montana Legislature requires mandatory trapper education. ■



Promotional hunter education photo from 1972

ADULT-ONSET HUNTERS

Montana, like much of the West, has seen a population boom with many new residents interested in the outdoors and hunting. A growing number of older “adult-onset” hunters has also led to increasing demand for hunter education. The largest Hunter Ed demographic, at nearly 5,000 students currently enrolled, are age 18 to 35, most of whom take their class online. But some do take in-person classes, and instructors say they have seen a growing number of kids and adults with little exposure to hunting or firearms.

“We have a lot of students who don’t come from a traditional Montana hunting family,” says Dave Genter, lead instructor for the Bozeman area. “We spend a lot of time talking about the fundamentals of safety, but there’s also a lot of back and forth about decision-making and ethics, and I think those topics are just as important.”

Genter adds that many students—kids and adults—are learning for the first time how to survive in the outdoors, what to do if they get lost, and techniques for field dressing an animal they harvest. “Unless you’ve been out hunting with your dad or mom or uncle, a lot of this can be a big mystery,” he says.

As with many volunteer-led organizations, Montana’s Hunter Education Program

needs more volunteers. The average age is 65, and in many areas, a core group of as few as 10 instructors teach hundreds of students each year. Some rural areas have only one or two instructors.

FWP staff and hunter education leaders have redoubled recruitment efforts to bring in more volunteers. They show up at conservation organization banquets, distribute fliers, launch media campaigns, and urge former instructors to return.

“We recognize that people have busy schedules, and I know some people are nervous about getting up in front of a class, but I want them to know that there are many different things they can do to help,” Crowser

“We recognize that people have busy schedules...but I want them to realize that there are many different things they can do to help.”

says. “We have roles for instructors who only have time to come out for a field day. We have volunteers who help out behind the scenes with logistics and support. There are lots of ways to get involved.”



EXPANDING PROGRAMS In 2021, the state legislature required trapper education, which includes information on Montana’s rich trapper heritage, for all new trappers. Wolf trapper education is also required for all wolf trappers.

The efforts seem to be paying off. In a typical year, FWP sees about 40 instructors sign up. By August of this year, the department had already enrolled 54 new volunteer instructors.

SHARING A LEGACY

The final task I had to complete was to team-teach a class with an experienced mentor. That weekend, the other would-be instructors and I watched as experienced instructors taught the wide-eyed students about the “zone of fire” (the dangerous distance around a firearm where someone could be injured by an accidental gunshot), how to shoot from various positions, applying first aid, and hunting in bear country. They engaged the students to think about how they would handle each situation.

NEW MANAGER MAKES A PERFECT FIT

When Francis Reishus read the job posting for Montana Fish, Wildlife & Parks’ Outdoor Skills Program manager in 2023, he felt like it was written for him.

Reishus grew up on his parents’ cattle ranch along the Rocky Mountain Front. “As a ranch kid, it was the greatest childhood imaginable,” he says. “It was hard work fixing fence and picking rocks, but I also got to spend a lot of time in the outdoors hunting and fishing.”

Reishus’s family moved to Helena when he entered high school, and he graduated from Capital High. Afterward, while working a construction job in Missoula, he decided to become a teacher. “The most influential people in my life up to that moment had been teachers,” he says. “I was like, ‘I can do

this,’ and soon I was working on getting my education degree.”

After graduating from the University of Montana, Reishus taught four years at an elementary school in Missoula, then moved with his wife to the Helena area. He taught middle school social studies in Montana City for seven years, where one of his favorite projects was spearheading a new outdoor skills class.

When FWP officials hired Reishus for the posted position to manage

Montana’s hunter, bowhunter and trapper education programs, he found the ideal way to match his love for the outdoors with his love of teaching. “You definitely see this need for these kids to connect to the outdoors, and I’m excited to be working with this passionate group of volunteers and staff to help kids and other beginners become ethical, safe hunters and future wildlife conservationists,” Reishus says. ■





We rookie instructors reminded students of the four key tenets of firearm safety: Always point the muzzle of your gun in a safe direction; always treat every gun as if it were loaded; always be sure of your target and beyond; and always keep your finger off the trigger until ready to fire. And we stressed that we expected them to always follow those directives.

I found myself listening as much as possible to my more experienced fellow instructors, but happily jumped in to offer advice from FWP's comprehensive Hunter Ed manual and my 30 years of hunting. While many of the topics are serious, teaching Hunter Ed is definitely fun, especially to kids and adults so eager to learn and demonstrate their new knowledge.

Hunter Ed instruction includes a field day, when students must demonstrate skills ranging from safe firearm handling to blood trailing to deciding when not to take a shot—like when an animal is sky-lined on the horizon and there's no way of knowing what's behind it if the bullet misses.

IN GOOD HANDS

Above: Hunting accidents like those at fence crossings have dropped drastically over the past 67 years since the Montana Legislature first required Hunter Education certification for all young hunters.

Right: The author, with his newly issued FWP Hunter Ed instructor badge and vest, poses in front of the FWP headquarters building in Helena with sons Trenton (left) and Bridger.

The final step is a written test covering material from the manual and from the instructors. We instructors walked the room, clarifying the test questions as the students tried to remember the various parts of a lever-action rifle or the steps to ensuring a firearm is unloaded and safe to accept from another hunter.

As parents filled the back of the classroom and each student stepped forward to receive their certificate, it was clear that Hunter Ed is more than just checking a box for these families. It's about a legacy that these aspiring hunters were about to be a part of. I was proud to have helped. 

For information on becoming a volunteer Hunter Ed instructor, visit the FWP website at fwp.mt.gov/hunt/education/volunteer-instructors. Or contact Shelly Anderson at Shelly.Anderson@mt.gov or 406-444-9948.

Scan the QR code to the right with your phone camera to watch a short FWP video in which Montana Hunter Ed instructors explain why they volunteer their time and the rewards of teaching young hunters about safety and ethics.



Why upland bird numbers boom and bust, and how to take advantage of the good years and the bad.

MAKING HAY WHILE THE BIRDS FLY

By Jack Ballard



CALL IN SICK In years when pheasants and other upland bird species are abundant, hunters should take advantage of the bounty and spend as much time afield as possible. FWP biologists are cautiously hopeful that 2024 will be a decent year for roosters, sharptails, and gray (Hungarian) partridge.

My dog Percy pauses ahead of me, his jog along a wetland interrupted by bird scent. The English setter veers abruptly into the marsh, the fuzz from a shaken cattail slowly settling on his haunches and upright tail, the remainder of his rigid body obscured in the shoreline vegetation. I hurry toward his location, but a rooster pheasant bursts from the cattails a

bit out of range. As I reach my still-stationary setter, a second rooster erupts from cover less than a yard in front of his nose.

The pheasant folds at my shot then drops. Moments later, my dog delivers the trophy to my feet. The bird joins two others in the back of my vest. Percy looks my way, then turns expectantly ahead toward another strip of cattails.

"Sorry, old man," I tell the 10-year-old setter. "That's a limit."

What a difference a year can make! The previous upland bird season, Percy and I hunted the same location on almost the same day on the calendar. We hunted until mid-afternoon and harvested the only cock we were able to kick from the cattails. But here we are, with a limit of birds in the



USUALLY A BLESSING A thunderstorm moves across the prairie near Heart Butte on the Blackfeet Indian Reservation. Rain is essential for producing dense grass and forb cover that upland birds need for nesting and brood survival—not to mention that farmers need for hay and other crops. But sometimes late spring and early summer storms, especially when they produce localized hail and cold winds, can kill vulnerable chicks.

bag at just past 10 a.m.

I know you can't judge the size of pheasant populations in separate years by comparing just two outings. But in this case, those hunts represented what biologists and hunters across Montana later verified with harvest reports: One year produced a bumper crop of roosters, while the previous one was a dud.

The old saying "Make hay while the sun shines" recommends taking advantage of a good situation while conditions are favorable. The origins were from cutting, raking, and stacking hay on sunny, dry days, before rains made the job difficult. But the adage applies just as well to upland bird hunting.

Populations of pheasants, gray (Hungarian) partridge, and sharp-tailed grouse fluctuate widely from season to season, mainly in response to weather. When conditions create large bird numbers, a hunter needs to be ready to take advantage of that year's bonanza and, as they say, make hay. And during bleak years, hunters need to

ratchet down their expectations and prepare to hunt much harder.

RAIN, BUT NOT WITH COLD AND HAIL

Upland bird populations "boom" in response to ideal nesting and rearing conditions that allow hens to hatch large numbers of eggs and enable chicks to survive until autumn, says Justin Hughes, an upland bird biologist with Montana Fish, Wildlife & Parks in Miles City. Ideal growing conditions for grass and

cover from the previous season can also be critical. Hughes says that sage-grouse research indicates that the birds use the previous year's vegetation during cold springs when new grass growth is delayed.

Hearty plant growth not only provides nesting cover, it also provides "brood cover" by nourishing insects that baby upland birds eat during their first few weeks. Newly hatched chicks feed on smaller insects like ants and tiny spiders, then move to beetles and grasshoppers as they grow bigger.

Those bugs also provide vital protein for female birds recovering from the physically taxing work of laying eggs and rearing young. Hen pheasants commonly lose 20 percent or more of their body weight from egg-laying and nesting, sapping their strength and making them more susceptible to malnutrition and predation.

"Brood cover can be almost as important as nesting cover for pheasant production," Hughes says.

For sharpies, too. On more than one occasion, I've harvested juvenile sharp-tailed grouse in eastern Montana in early September that were so stuffed with hoppers they were

**"Brood cover
can be almost as
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production."**

other ground vegetation require good over-winter soil moisture and abundant spring rains with warm temperatures.

Most of that grass cover will come from new growth, but in less-than-ideal years,

Writer and photographer Jack Ballard lives in Red Lodge.



MIGHTY MORSEL Young pheasants and other upland birds rely on grasshoppers for a protein boost. Years of good hopper production often produce healthy numbers of upland birds as long as the insects don't eat up all the cover.

regurgitating the insects from their crop.

High grasshopper numbers and game bird reproduction don't always correlate. Hoppers do best in dry conditions, while grass needs plenty of moisture. What's more, grasshoppers eat grass, so in drought years when insect numbers are booming, the insects devour much of the vegetation that manages to sprout. That leaves young birds vulnerable to predators and the elements even though there are plenty of bugs to eat.

The nature and timing of precipitation is just as important as volume. Downpours anytime from May through early July can literally drown newborn chicks. If coupled with cold temperatures, heavy rains can dramatically increase the risk of hypothermia. Hatchlings can die within a few hours in wet, windy 45-degree temperatures if unprotected by their mother's plumage.

"In years with a really wet and rainy late spring and early summer, we can see a decrease in chick production," Hughes says. "For hunters, that actually becomes more obvious the following hunting season." For example, Hughes points out that in the last drought cycle, hunters were pretty happy with the number of birds they encountered the first really dry year (2020). But the drought caused reproduction rates of upland species to drop, meaning fewer birds the following year, when hunters had to work

harder to put birds in the bag.

Ironically, many hunters fail to recognize a banner bird year because they have a tough time finding the birds. Hughes hunts all kinds of upland birds behind his German shorthair pointers but is especially fond of sharp-tailed grouse and pheasants. He notes that the very conditions that produce lots of birds—abundant vegetation—can make hunting difficult. "The birds have so much available cover that they really spread out," he says.

"Waste grain left on fields is usually enough to carry pheasants and gray partridge through the winter unless it gets covered in too much snow."

BEWARE THE DEEP SNOW

While lots of vegetation and grasshoppers contribute to strong upland bird populations, severe winters and drought drag numbers back down. "Long, hard winters with deep, heavy snow and ice are especially hard on non-native upland birds," says Hughes,

because they rely more on agricultural foods. Native sharp-tailed and sage-grouse have adapted more to berries and leaves than grains. "Snow isn't necessarily bad, until it gets too deep and prevents pheasants and gray partridge from foraging," he explains. Making things worse are warm, sunny mid-winter days that melt snow, which re-freezes overnight with an ice crust that prevents birds from reaching food. Winter rains that freeze create the same problems. "Even if the ice cover is thin, it can lock up forage," Hughes says.

Pheasants and gray partridge typically benefit from agriculture in winter. "Waste grain left on fields is usually enough to carry them through the winter unless it gets covered in too much snow," says Ken Plourde, FWP upland bird biologist in Glasgow. "When snow gets crusted or covered in ice, they turn to less plentiful food sources like buffalo berries, Russian olives, or the seeds from tall weeds." But picking at these low-calorie foods means birds are exposed for a longer time, making them more vulnerable to the elements and predation.

For game birds, there's nothing worse after a snowy, cold winter than a hot, dry spring and summer. Without adequate nesting cover from new vegetation, female birds and their nests are more easily discovered by predators. The sparse grasses and withered forbs also mean fewer insects for hatchlings to eat during

"When snow gets crusted or covered in ice, they turn to less-plentiful food sources like buffalo berries, Russian olives, or the seeds from tall weeds."



WOES OF WINTER Deep snow is another killer for upland birds—especially non-native pheasants and gray partridge. If too deep or crusted, the snow can prevent birds from reaching grains on the ground. Plus it makes the birds more exposed to predators as they spend additional time finding enough calories to survive the cold. Cattails are essential cover for pheasants, and brushy shelterbelts without raptor-friendly trees benefit gray partridge (below).



their first few weeks of life.

Isolated hail and wildfires also pose threats to local bird populations. "We can get quite a bit of hail in southeastern Montana, hailstones large enough to kill juvenile and even adult birds," Hughes says. Unlike hail, wildfire seldom kills birds outright. But it "forces birds to relocate somewhere else where the habitat might not be as favorable to nesting or brood production," Hughes explains.

GAINING AN EDGE

How might a savvy upland bird hunter use all this information? Hughes offers several tips. First, keep tabs on weather conditions throughout the year for the areas where you hunt. If it looks like a bust year, lower your expectations and plan on walking miles between flushes. "The one bit of good news about low numbers is that word spreads fast

and you won't have as much competition from other hunters" as in boom years, the biologist says. The birds will be few and far between, but at least you'll have them mostly to yourself.

If favorable weather conditions seem to predict a banner bird year, be prepared to take as much vacation time off as your boss and spouse will allow so you can take full advantage of that bounty.

Keep in mind that good news also spreads fast, so you'll have more competition.

One strategy for early season sharptails and gray partridge during banner years is to stay away from dense stands of grass and forbs, such as those found on CRP acreage. "The birds get claustrophobic in too much cover," Hughes says. "I look for areas that have been grazed, or the drier south-facing slopes that tend to have less cover." The

thick prime cover is also where most other hunters gravitate, so by hunting secondary spots you're more likely to pick up birds that haven't been spooked.

Montana's upland bird populations have suffered in recent years due to long-term drought. But numbers were up a bit in 2023, the winter of 2023-24 was mild, and enough rain fell this past spring in many areas to create good nesting cover. "It's still too early to tell, but I'm predicting a pretty good year for bird production," Hughes says.

If so, that means he'll be out there with his German shorthairs taking advantage of the bird boom. "But to tell you the truth, I'm out there hunting as much as I can no matter what the bird numbers are like."

Turns out that some Montana upland bird hunters try to make hay whether the sun shines or not. ■

CLOCKWISE FROM RIGHT: STEVEN AKRE; STEVE OEHLENSCHLAGER; LESTER A. KISH

FWP AND GROUPS HELP MITIGATE MOTHER NATURE

Wildlife biologists and upland hunters can't do anything about the weather. But they try to protect as much nesting, brood, and winter habitat as possible to help birds thrive when weather conditions are favorable and survive in years when winter snow is deep and spring rains don't fall.

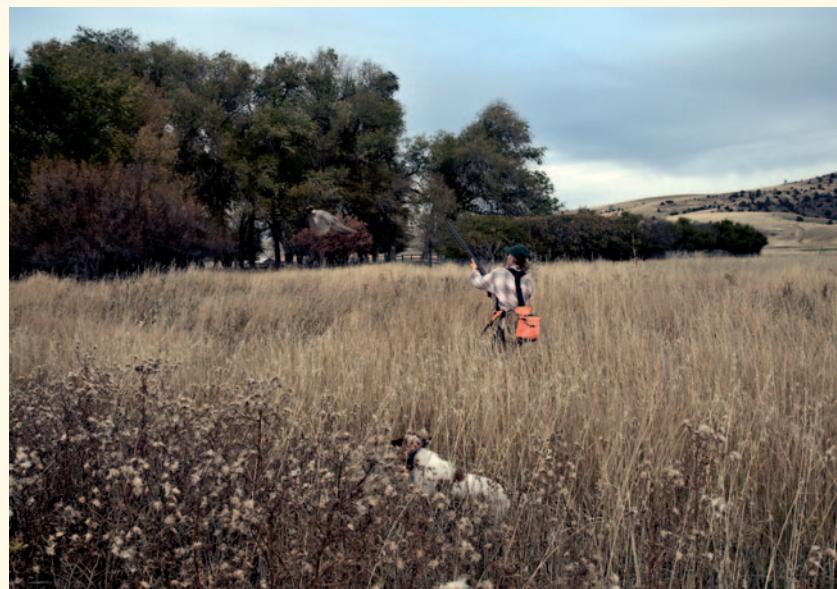
Abundant quality winter habitat is critical for helping birds escape the elements and avoid predators. "Cover that's large enough and dense enough to cut wind and block snow is key to winter survival," says Ken Plourde, FWP upland game bird biologist in Glasgow.

On the prairie, stands of native chokecherry and buffalo berry found in coulees are vital for pheasant and sharptail survival. Pheasants also huddle in frozen cattail marshes, which act like giant down sleeping bags to trap heat and block wind. Protecting such areas from trampling by livestock is one way to ease the stress on upland birds during winter.

Planted shelterbelts are another excellent source of winter cover. "Good shelterbelts consist of multiple rows of shrubs that catch snow and break the wind," Plourde says. "For upland birds, shelterbelts consisting of shrubs without trees are the best. Trees provide nesting and perching places for raptors that prey on game birds."

As for drought, the key is to protect and restore large tracts of prime nesting and brood cover so that at least some vegetation will be available. Small patches and thin strips won't cut it. Any nest will be easily found by a roaming fox, coyote, or skunk. "Some research shows that 20 acres is a minimum for decent chick production, with survival rates getting progressively better up to 160 acres," Plourde says.

Federal programs pay farmers to convert croplands to grasses and protect marshes that provide vital winter protection. At the state level, FWP works with groups like Pheasants Forever to pay landowners to protect and restore prime upland game bird habitat. ■



By protecting grasslands, FWP, groups like Pheasants Forever, and conservation-minded farmers help upland birds thrive in good weather and better survive years of severe drought, deep snow, and especially cold winters.



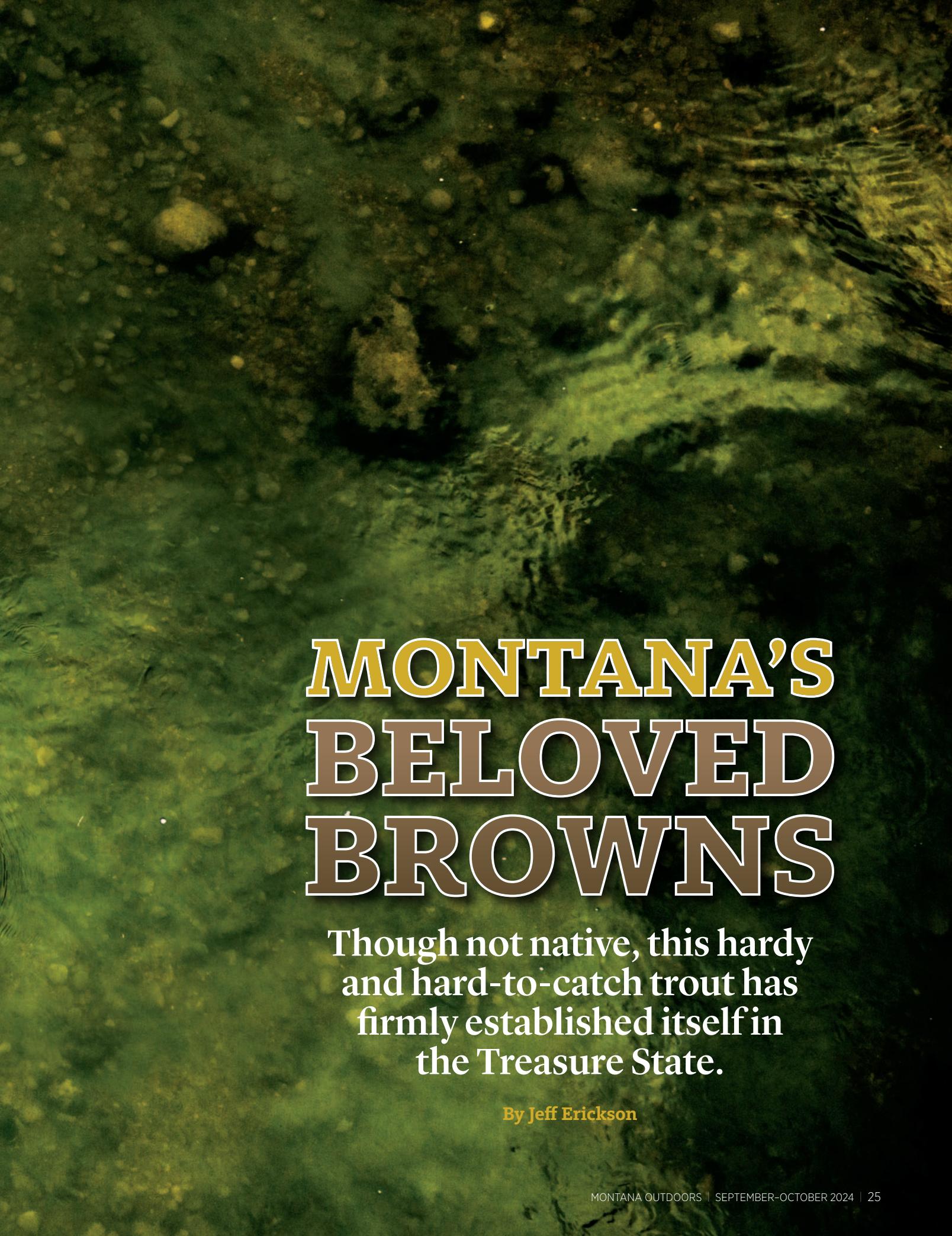
ABOUT THOSE BAD YEARS... When upland bird numbers are low, which has been the case in recent years due to severe drought and loss of CRP grasslands, hunters need to adjust their expectations. Points and flushes will be fewer and farther between, and birds in the bag will require more miles afield than in good years. One silver lining: Once word gets out the bird numbers are down, you'll likely have the fields all to yourself.





TO THE NET An angler works to land a big brown trout on the Bull River. Browns are considered the most difficult trout to hook, and they can grow to 20 inches or longer in many rivers.

PHOTO BY BEN PIERCE



MONTANA'S BELOVED BROWNS

Though not native, this hardy and hard-to-catch trout has firmly established itself in the Treasure State.

By Jeff Erickson

On a cool, cloudy October evening in a side channel of the Missouri River, I repeatedly hurled a weighted Woolly Bugger tight to the boulders below the brushy bank, the meaty bug just missing my head as it whistled past my ear. Finally, on one retrieve, a large fish attacked the black streamer.

The fish sulked in the depths, shaking its head, then raced downstream toward a beaver lodge, my reel screaming in protest. I just managed to turn the trout before it disappeared into the underwater logs, a back-and-forth battle that gradually tilted in my favor. I finally landed the beautiful 20-inch brown just as the setting sun broke through the clouds and illuminated the snowcapped peaks of the Big Belt Mountains.

I unhooked and released the trout in the fading light, which revealed its formidable hooked jaws and brilliant coloration. Its broad back was painted olive-rusty and buttery toward the belly—with red and black spots, and, around the gills, splashes of indigo.

Given their widespread distribution, wild populations, and popularity in Montana, it's easy to forget that brown trout—like many human Montanans—are relatively recent immigrants. But this is one fish species no one should take for granted. In fact, if any salmonid can survive the state's warming weather, growing angler pressure, and onslaught of fish diseases, it's probably this one.

Von Behrs and Loch Levens

The original worldwide distribution of brown trout (*Salmo trutta*) was astonishingly vast. The species and variants were native to portions of Iceland, the United Kingdom and Ireland, continental Europe, southwestern Asia, and the Atlas Mountains of northern Africa. Brown trout eggs were originally imported to the United States in the late 1800s from Europe. "The von Behr and Loch Leven

are varieties of brown trout brought from Germany and Scotland, respectively. They are now irretrievably mixed," improving genetic diversity, Montana Fish, Wildlife & Parks fisheries biologists George Holton and Howard Johnson write in their 1996 *A Field Guide to Montana Fishes*.

For years, it wasn't unusual for Montana

Montana became a state. From there, browns likely made their way downstream into Montana via the Madison, becoming widespread in that river by 1917. They eventually entered the Missouri River and spread up its tributaries, establishing naturally reproducing populations.

Subsequent stockings around Montana greatly expanded their range, including the Yellowstone and Clark Fork drainages. Angling clubs across the state often helped with stocking, sometimes from their own private hatcheries (before aquaculture became highly regulated by the state to prevent the spread of disease and invasive species).

In *A History of Montana's Fisheries Division, 1890-1958*, FWP fisheries biologist Bill Alvord writes that "special railroad cars were developed with aeration systems which made possible the transportation of fairly large numbers of fish over long distances." Montana's first fish hatchery was completed in 1896 on Bridger Creek near Bozeman, and brown, brook, and rainbow trout were distributed by rail from the facility

widely over the next several decades.

As more hatcheries were built in the early 20th century, diverse fish species, including browns, were planted across Montana. "Practically every accessible water in the state received fish of some kind at the discretion of the planter and without regard to actual need or desirability. A scientific basis for fish stocking was still well in the future," Alvord wrote.

Once brown trout became established in a stream, stocking was no longer necessary because the fish reproduced naturally. Montana discontinued stocking browns in major trout rivers in 1954. Twenty years later, the state discontinued stocking rainbow trout in



OLD-COUNTRY ORIGINS Illustrations of the Loch Leven trout (top) and the von Behr trout by Miles E. Rost, from his 1934 catalog *A Portfolio of Fish*.

anglers to refer to these fish as "German browns" or "Loch Levens" (after the famous Scottish lake that supplied brown trout eggs to the United States). Even today, a Yellowstone River FWP fishing access site in the Paradise Valley is named Loch Leven. And the abbreviation that FWP biologists and technicians still use for brown trout is "LL."

Though Western waters were already filled with native bull trout, Arctic grayling, and westslope cutthroat trout, browns held special appeal for immigrants from Europe. The U.S. Bureau of Fisheries first stocked browns in Yellowstone National Park's Firehole River basin in 1889, the same year

Helena-based writer Jeff Erickson is a longtime contributor to Montana Outdoors.



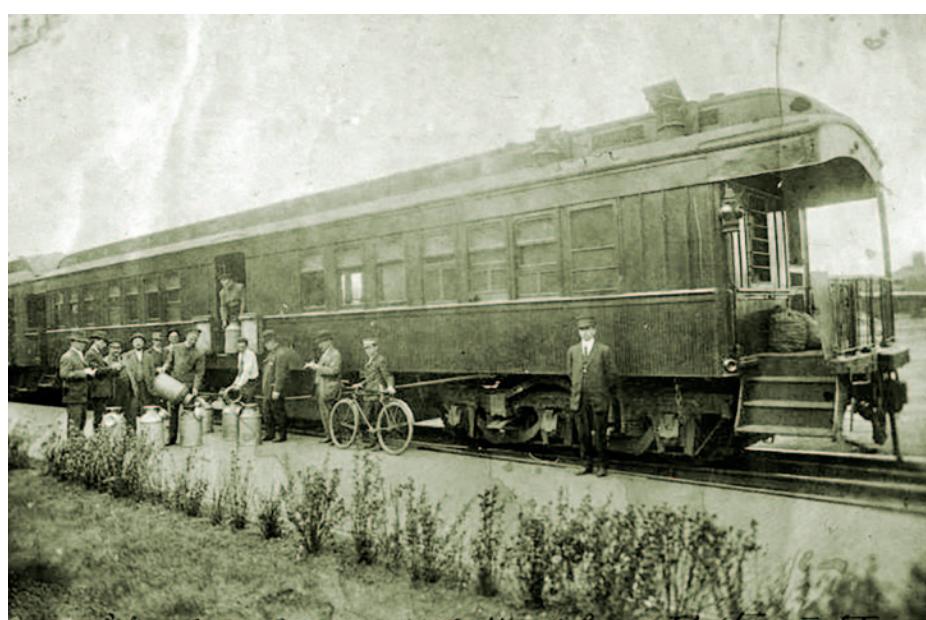
streams and rivers after a study showed that planted fish disoriented wild trout and made them vulnerable to predators and anglers.

Browns today

Brown trout are now broadly distributed in Montana. Most swim in the state's southwestern region, east to the island ranges around Lewistown, in Fort Peck Reservoir, in the Tongue River above Miles City, and throughout the Yellowstone watershed to Billings, including the fabled Bighorn River. In western Montana, the Clark Fork drainage also holds browns. Because of their preference for slightly warmer water, the species is scarce or absent in chilly mountain lakes and streams.

Browns can survive in waters too warm or turbid for native westslope and bull trout. They typically thrive in an optimal temperature range between 55 and 65 degrees but can survive in water even as warm as 80 degrees—which is why anglers often see them mixed in with warmwater species like goldeye and smallmouth bass in the middle reaches of the Musselshell, Yellowstone, and Tongue rivers.

ANGER ISSUES A brown trout on Rock Creek is released after attacking a Clouser Minnow. During the fall spawning season, browns become increasingly territorial and go after streamers and lures.



TROUT TRACKS From 1871 to 1940, the U.S. Fish Commission delivered brown trout and other fish on specially designed train cars to Montana and other states, as well as to private groups and individuals. The cars had water tanks, aeration devices, cooling systems, and bunks for the attendants. Recipients would wait at the station to pick up fish and stock them into local rivers or ponds. In 1940, the commission was abolished when it became part of the newly created U.S. Fish & Wildlife Service.

The Saga of Old #134

Following one big brown through the years

By Jerry Wells

[This article originally ran in Montana Outdoors in 1981. Jerry Wells was an FWP fisheries biologist, regional supervisor, Land Program administrator, and frequent contributor to Montana Outdoors.]

The old boy wasn't always known as #134. Before an Indian summer day in September 1970, he was anonymous. Just another 2-year-old brown trout, hardly a unique figure in the Big Hole River. He lived in the Red Tail Hole in those days, just up the river from the McCullough Ranch, south of Melrose. Matter of fact, I think he still lives there—but I'm getting a little ahead of things.

It was the first autumn that this brown trout would spawn, the first chance to pass on that genetic information passed down to him from his ancestors. Ancestors that stretched all the way back to Europe, home of his species. It was also the last day he would remain anonymous. On that warm September afternoon, an electrofishing crew from the Montana Department of Fish and Game worked its way down from Melrose to Brown's Bridge. They captured this brown trout and put him in a tank with others of his kind. The fish were measured, weighed, a small edge of a fin clipped, a few scales taken from beneath the dorsal fin; and then they were released. The information collected would be used to assess growth rates and population size. The fish were also tagged with individually numbered blue plastic tags, inserted just behind the dorsal fin, which would be useful later in assessing fisherman harvest and fish movement.

Our friend was 13.5 inches long and weighed 1.04 pounds. His blue tag number was 134.



That was the fall of 1970. Many events cast their shadows across the Big Hole and its trout population before we saw #134 again. Reichle Dam was proposed by the Bureau of Reclamation, and again more recently by the Army Corps of Engineers: a dam that threatened to impound a good portion of the blue ribbon section of the Big Hole, and forever change the character of this wild, free-flowing river. (The dubious economic value of this project moved it onto a back burner in the early 1970s, but the proposal is far from dead.)

In 1973, snowpack in the Big Hole drainage was very low and the river went to a stage of extremely low water during the summer irrigation season; in August, near the mouth of the river, flow actually ceased. Upstream near Melrose, low flow and high water temperatures resulted in low oxygen concentrations and very adverse conditions for trout. Whitefish were observed dying throughout the river. In 1977, snowpack was again low. Spring rains prevented catastrophic dewatering of the lower river, but the fish population experienced the lowest flow since 1973. These were hard times for trout. And then, on a rainy September morning in 1977, during our first electrofishing run of the fall, we captured #134.

Again he was in the Red Tail Hole, not far from where he had been released seven years

earlier. He was now 9 years old, ancient in a species where 5 or 6 denotes a graybeard. He was 18.7 inches long and weighed 2.34 pounds, a beautiful male brown trout with lower jaw (kipe) grown out in preparation for spawning. For nine years he had endured all that the Big Hole had to offer. He had survived low summer flows, winter ice, and untold numbers of fishermen. We released #134, awed by his longevity and certain we would never see him again.

A year later, on another Indian summer day in early October of 1978, we made our last electrofishing run of the season on the Big Hole. Flows during that summer had been excellent and the trout had thrived—including #134, whom, to our complete amazement, we captured again. The year had been good to him, and he had gained nearly half a pound. He was now 10 years old and 18.9 inches long, weighing 2.88 pounds. He bore a hooking scar on his left upper jaw. Perhaps he had been caught and released by a fisherman during the salmonfly hatch the preceding June. By now the old boy was pretty special to us, and it was with a sense of respect that we gingerly released him once again into the Red Tail Hole.

The winter of 1978-79 was the coldest on record in Big Hole country. Temperatures plummeted to 50 below zero and stayed well below



WATCHING THE HATCH - BROWN TROUT BY MARK SUSINNO

zero for weeks. Icing conditions on the river were severe. Spring came late. It was a snowy morning in early April of 1979 when we began our spring electrofishing. To make a long, cold story short, we captured #134 again.

He had made it through another winter, a tough winter, and he was 11 years old, an unbelievable age for a brown trout. But the winter had been hard on him, and he had lost weight: now 19 inches long, he was down to 2.44 pounds. Eleven years in the Big Hole and our friend had taken all that the river had given him. He had thrived and he had suffered. He had spawned for nine seasons and he had seen three fisheries biologists come and go. For 11 springs, red-tailed hawks had returned to nest and fledge their young in the cliffs above his hole, and still he endured; and so has the free-flowing Big Hole.

Well, we didn't capture old #134 in the fall of 1979, nor did we get him in the spring or fall of 1980. We looked for him and we wondered about him. Did a fisherman catch him, or did he up and die on us? I don't know the answer. But the ice is going off the river, and on St. Patrick's Day we are going to start electrofishing, and that night we will stop at Joe Grogan's Bar in Glen—and I hope we can tell Joe that old #134 is still around. He'd be 13 now. 

Browns thrive where there is "overhead cover" such as undercut banks, overhanging bankside willows, aquatic vegetation, tree root wads, and logjams. Where rainbows might be in a sunny shallow riffle feeding on nymphs, a brown will be tucked back deep under a shaded bank. Rivers like the Ruby and Jefferson often have these features, but when prolonged drought and reduced, warmer flows draw water away from the banks—exposing bottom cobbles, sand, and mud—browns must persist in the open and sunlight they try to avoid, exposed to predators like ospreys, bald eagles, river otters, and anglers.

Brown trout often coexist with rainbows and other trout species in the Yellowstone, Missouri, Madison, Bighorn, Smith, Jefferson, Ruby, Big Hole, Beaverhead, and Bitterroot rivers, and in Rock Creek, south of Missoula. But the proportion of browns, rainbows, and other trout in a given river stretch varies widely and can fluctuate. The Mallard's Landing FAS stretch of the Bighorn River, for example, contained twice as many rainbows as browns in 2022, but in 2019 and 2020 browns greatly outnumbered rainbows. On that river, releases from Yellowtail Dam in the fall, when brown trout spawn, greatly influence numbers of the species from year to year.

On the Missouri River near Wolf Creek,

FWP survey data going back to 1982 shows an average of 563 browns and 3,387 rainbows per mile. The Missouri, with its broad runs and relatively little overhead cover, doesn't have as much brown trout habitat as, say, the willow- and alder-choked Beaverhead.

Generally, browns are not as prolific as other trout species and thus have lower population densities.

According to Robert Behnke, author of *Trout and Salmon of North America*, brown trout are relatively long-lived, surviving approximately 4 years in small streams, 5 to 12 years in rivers, and sometimes 15 or more years in lakes (see the story of ancient #134 at left). If a brown lives long enough to reach 12 to 15 inches, its diet begins shifting from aquatic and terrestrial insects to a meatier diet of minnows, sculpins, crayfish, fish (including trout), and the occasional mouse, frog, lizard, snake, or even duckling. A new state record of 32.42 pounds (37 inches long) was set in 2021 on the Marias River, breaking the long-standing record from 1966, a 29-pounder taken from Wade Lake. Rainbows get big, too, but on average brown trout grow to larger sizes in most waters.

Trophy-hunting brown trout anglers toss streamers, spinners, spoons, or even deer-hair mice, especially during the fall spawning season, when browns become

READY FOR ANYTHING A fly angler casts to pocketwater on the Madison River near Three Dollar Bridge Fishing Access Site, near Cliff Lake. Brown trout often coexist with other trout species, as they do with rainbows on the Madison. But browns are not as prolific as other species, so in most waters they have lower population densities.



JOHN JURACEK

particularly aggressive. Some anglers fish after dark wearing a headlamp.

Beautiful, big, and elusive

In addition to their size, brown trout are renowned for their beauty, the buttery brown body flecked with red and black dots. Many (though not all) anglers also like that browns are especially wary and more challenging to catch than other trout species. One reason may be that the species was pursued by anglers for centuries in Europe, and natural selection weeded out the gullible specimens. Writes Behnke, “Generally the rank for anglers from easiest to hardest to catch is: cutthroat trout, brook trout, rainbow trout, brown trout...In rivers where both rainbow and brown trout occur in about equal numbers, typically three rainbow trout are caught to every brown trout.” FWP studies of hook scars on jaws of trout in western Montana found the scarring rate for browns (indicating they had previously been hooked) was just 10 percent, much lower than other, more deceivable trout species.

Recent concerns

FWP fisheries biologists have mixed feelings about brown trout. Populations here are wild and self-sustaining, and the species

is popular with anglers. Yes, the fish are non-natives that outcompete native cutthroat and grayling, “but they don’t hybridize with cutthroat, making them less a threat to native populations than rainbows,” says Pat Saffel, FWP regional fisheries manager in Missoula.

Because browns don’t need water quite as cold as what other trout require, biologists hope the species will be more likely to survive global warming. Yet in recent years, brown numbers have tanked in some rivers. In 2023, biologists reported that trout numbers in parts of the Big Hole, Jefferson, and Ruby had dropped to historic lows. For example, densities on the Melrose section of the Big Hole declined from a peak of more than 1,800 per mile in 2014 to fewer than 500 in 2023.

Though numbers rebounded slightly in 2024, FWP is working with Montana State University on a multiyear study to figure out why the fish are doing so poorly. It’s likely that low, warm water is one of the culprits. “It may be that brown trout are not able to withstand climate change as well as we thought they would,” says Mike Duncan, FWP regional



GO BIG OR GO HOME Above: To catch monster browns, many anglers throw big flies like these Sex Dungeons, shown smaller than actual size. Below: Robbie Dockter of Conrad holds the state record brown trout. He caught the 32.42-pounder on the Marias River in 2021.





TROUT OF TOMORROW? Left and above: Brown trout can tolerate warmer and murkier water than rainbows and especially native cutthroat and bull trout. But like all salmonids, they do best in cold, clean rivers. Will Montana's streams be able to sustain those conditions in the future?

fisheries manager in Bozeman.

In other streams, brown numbers are booming. On the Bitterroot River and Rock Creek, FWP biologists have documented a long-term increase in brown numbers and an expansion of the species upstream, which could be due to warming water temperatures in the headwaters.

At the same time, Saffel says there's been an "all-out collapse" of the brown population in the Clark Fork River upstream from Deer Lodge. Reasons for the decline are not clear, but it appears to be more than low flows and the toxic mining wastes that limited trout numbers in the past. Bulldozers and backhoes are removing the waste that was dumped a century ago from Butte copper mines and Anaconda smelters, and river

habitat is healing from the disruption.

As with all Montana salmonids, global warming is a growing threat. "Snowpack is essential for maintaining cold stream waters, and there's been a pretty substantial decline in snowpack over the past 50 years," says Dr. Tim Cline with the Department of Ecology at Montana State University. Other trout threats caused by warming temperatures are drought, wildfire, and silt-laden mountainside flooding that often occurs after fires burn off ground vegetation. "In the decades to come, I can see Montana losing a full one-third of its trout habitat," Cline says.

FWP is helping the beleaguered fish by protecting and restoring habitat through its Future Fisheries Program. Department staff

are also working with willing farmers and ranchers to modify irrigation in key stretches so that more water is available for trout in mainstem rivers and spawning tributaries (See "Our Point of View," page 5).

Despite the threats they face, browns are a hardy fish. They can survive in streams where other trout die out and are less susceptible to whirling disease, having evolved with and adapted to the disorder in their native Europe for centuries. When whirling disease ravaged rainbow trout populations on the Madison River during the late 1990s and early 2000s, browns emerged unscathed.

Browns have proved over the past century they can survive and thrive in Montana. They aren't native to this state, but it seems like they are doing all they can to stay here. 

BACK TO BASICS: LONGBOWS

By using weapons that differ little from those used thousands of years ago, longbow archers make fair chase even fairer.

By E. Donnall Thomas, Jr.



GROUNDED A hunter using a longbow poses in a pit blind. A minority among bowhunters, who mostly use technically advanced compound bows, traditional archers say they enjoy the challenge and link to the weapon's ancient origins.

Having lived in Alaska for years, I was more than familiar with moose. I'd successfully hunted them in habitats ranging from alpine tundra to boggy spruce forest to my own backyard hayfield. But never had I pursued these largest members of the deer family in anything like what I found north of Cooke City, Montana, the year after the great Yellowstone fire of 1988—a desolate landscape of dead pines and charred stumps. Yet somehow, through a combination of luck and perseverance, I'd managed to locate a herd of a half-dozen cows, a young spike, and a mature bull all feeding together on shrubs leafed out after

the previous year's conflagration.

In Alaska, mid-September marks the beginning of the annual moose rut, when hunters make various "moosey" sounds to lure territorial bulls into close range. But in Montana, the rut comes a few weeks later, and because the old bull was tolerating the youngster's presence, I knew mating season hadn't begun and calling wasn't the correct strategy. Instead, I decided to slowly stalk my quarry.

After two hours, I was able to sneak to within 20 yards of the big bull without him or the others spotting or smelling me. As he stood broadside, I drew back my longbow and fired a handmade cedar arrow deep behind his shoulder.

As the bull bolted downhill, I could see the

arrow's bright feather fletches right where I'd aimed, leaving me confident that I'd made a killing shot. Because such an impression can sometimes be inaccurate, I waited an hour before taking up the trail. Even a mortally wounded animal may lie down after being hit, and bumping it from its bed can make recovery difficult. Roughly 100 yards over the crest of a hill where I'd last seen him running, I found the dead bull and began the long process of field dressing the carcass and hauling out the meat.

Humans and moose, along with elk, grizzlies, and wild sheep, crossed the Bering Sea land bridge to North America roughly 15,000 years ago. Those early immigrants hunted with Neolithic weapons that did not differ much from what I'd used to kill that

E. Donnall Thomas of Lewistown is the author of *Traditional Bows and Wild Places*.

bull. Thankful as I was for the mountain of venison before me, I derived even greater satisfaction knowing I had taken the moose without benefit of modern technology.

COPPER AGE ORIGINS

No one knows exactly when or where some Indigenous innovator first attached a string to a stick, whittled a shaft, knapped a stone point, and invented the bow and arrow, but that event clearly preceded the dawn of recorded history. In 1991, two tourists hiking the Italian-Austrian Alps stumbled across mummified human remains preserved in a layer of ice. Subsequent laboratory dating placed his time of death around 3,000 years BCE. The find included a well-preserved trove of Copper Age artifacts, including a quiver containing a dozen arrows. Other items suggested that Ötzi, as he became known, had been hunting at the time of his death, but the corpse also included an arrowhead buried in his shoulder. These findings defined the dual purposes that the bow and arrow would serve during the next 4,000 years: killing food and killing people.

After the invention and steady improvement of firearms, the use of bows for hunting and warfare all but disappeared from most of Europe and North America. That began to change in the late 19th century when Florida brothers Will and Maurice Thompson, who as Confederate veterans were banned from possessing guns, began to study Native archery, make their own traditional bows, and hunt with the devices. Maurice's book *The Witchery of Archery*, published in 1878, reached a

wide American audience and stirred some general interest in bowhunting.

A second milestone occurred in 1911 when a starving Native American named Ishi, the last surviving member of the Yana Tribe, wandered into a northern California town near death. He eventually wound up at the University of California in Berkeley, where he was befriended and cared for by academic surgeon Saxton Pope. Ishi taught Pope and his hunting partner Art Young his tribe's traditional bow building and hunting methods. Pope and Young began to write about and lecture on their worldwide bowhunting experiences, creating wide interest throughout the United States.

Returning American WWII and Korean War veterans who had witnessed sport archery in Korea, Japan, and other Asian countries further popularized the activities in this country. Legendary longbow master Howard Hill introduced bowhunting to Hollywood, while entrepreneurs (and accomplished bowhunters) like Fred Bear and Ben Pearson turned bowhunting into successful businesses.

The development and marketing of the pulley-equipped compound bow in the 1960s revolutionized archery. By this time, most states had created special archery-only seasons, during which bowhunters used either longbows or laminated recurve bows. The new compound bows are more accurate than traditional bows at greater ranges and require less practice to shoot accurately. The pulley system also allows the archer to hold the bow longer at full draw. This enables a hunter to wait with arrow drawn while a deer, elk, or other prey moves into a shooting lane. As compounds became legal in state after state for bow seasons, they quickly replaced traditional versions among all but a handful of archers.

MONTANA CONNECTIONS

Bowhunting in today's Montana began with the Plains Indians, who mastered the skill



INSTRUCTOR In this 1912 photo, Ishi, the surviving member of the Yana Tribe, demonstrates how to shoot a bow made of yew with a thin backing of rawhide. He taught Saxton Pope and Art Young the art of bowhunting. Pope and Young later widely wrote and lectured about their worldwide bow hunts.

long before first European contact. Among the oldest pre-historic North American artifacts are spear heads and arrowheads commonly known as Clovis points dating back 13,000 years. The Anzick site, near Wilsall in Montana's Park County, yielded a particularly significant trove. Montana played another interesting role in archery history when, as historian Vic Hurley notes, the Battle of the Little Bighorn "marked the last appearance of the bow in formal war."

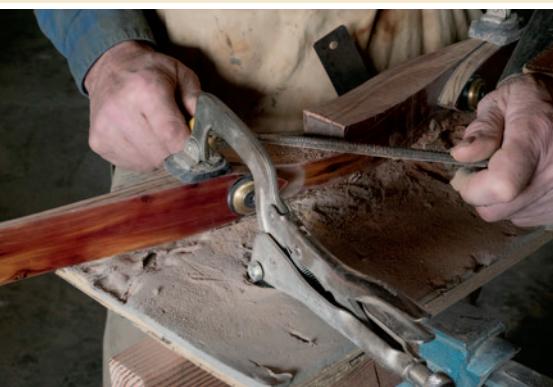
Horses introduced to the Americas by Spaniards in the 1500s allowed Plains tribes to reproduce the mounted cavalry tactics that allowed Genghis Khan to nearly overrun Western civilization. Surviving bows from the Blackfeet, Crow, and Sioux reflect this specialization. Native bows were short, usually between 40 and 50 inches long, so they could be shot from horseback. Most were "self-bows," carved from a single piece of ash, juniper, or yew and backed with sinew for greater strength and durability. An exception were the Turudika (or Sheep Eater Shoshone) of the Yellowstone plateau, who built



Quiver, bowstring, and arrows found with Ötzi, the name given a mummy found on a glacier in the Italian-Austrian Alps in 1991.



CUSTOM-MADE ARCHERY EQUIPMENT Top row:
A successful bison hunt using a Shoshone-style composite bow handmade from legally taken bighorn sheep horns. The Turudika (or Sheep Eater Shoshone) of the Yellowstone plateau were among the few North American tribes not to use ash, juniper, or yew trees for bow construction. Left: Handmade recurves and longbows built in Forest Grove, Montana. Right and below: Constructing a laminated recurve bow. Bottom row left to right: Practicing with a longbow; successful deer hunt; detail of a traditional arrow and fletching, made of wild turkey feather.



complex laminated bows of sheep horn.

Bison, the Plains tribes' principal quarry, were crucial not just as a food source but also for shelter, utensils, and clothing. Killing them from horseback required remarkable skill. The combination of bow and horse allowed Indigenous people to move with roaming bison herds, helping the already nomadic culture to flourish as never before.

Function dictated design in arrows as well as bows. Usually made from choke-cherry or serviceberry, shafts were often as short as 20 inches and heavily fletched for stability at close range. Traditional points were made of chert, flint, and obsidian, with the latter largely obtained through trade with tribes farther west. Common in Montana, the small stone heads commonly known as "bird-points" weren't meant for winged wildlife at all. They flew accurately when shot from horseback, and Native tracking and horsemanship skills allowed hunters to recover superficially wounded big game animals to make additional, killing shots.

Modern technology first changed traditional archery when early trappers and mountain men introduced crude iron "trade points," which rapidly replaced stone, a sad (to me) triumph of practicality over aesthetics.

TRADITIONAL BOWHUNTING TODAY

Today, the term "traditional bow" includes both longbows and recurves, a distinction that doesn't matter much to those who hunt with them and serves primarily to distinguish the devices from modern compounds. In simple terms, recurves are bent at both ends and longbows aren't. If the bowstring touches the belly of the limb between the limb tip and the riser (handle), it's a recurve. Recurves have ancient origins nearly as old as longbows, dating back thousands of years. I've hunted successfully with both and consider them equally traditional.

While most bows used by Neolithic hunter-gatherer societies meet the above definition of a longbow, they are perhaps better classified—with no derogatory implications—as "primitive." In this tradition, a subset of today's traditional archery community eschews all modern bow components, such as fiberglass limb backing and synthetic strings.

The prototype of what we think of as a



NO GIZMOS Recurves, like the one shown here, and longbows are considered "traditional" bows because they don't use pulleys to aid in drawing or holding the drawstring.

longbow today was actually developed for military purposes in medieval England. These 6-foot-long weapons had "draw weights" (the energy required to pull the bowstring back to the shooter's cheek) exceeding 100 pounds (today's hunting bows usually draw at 45 to 65 pounds) and shot heavy arrows capable of penetrating chainmail.

Both forms of traditional bows are qualitatively different from the modern compound, which is often equipped with sights, release aids, and other technical innovations. My purpose here is not to disparage compounds or those who hunt with them but to explain how they differ from their traditional counterparts and why that matters to hunters like me.

Just as bowhunting in general underwent a growth spurt two generations ago, interest in hunting with traditional equipment has experienced a sharp rise in popularity during my own tenure as a bowhunter. The Northwest in general and Montana in particular became prominent in the traditional bowhunting revival that began in the 1970s, as indicated by longbow and recurve sales, subscriptions to new magazines such as *Traditional Bowhunter* (which I co-edited for over 20 years), attendance at bowhunting events, and the formation of organizations dedicated to traditional bows. The Traditional Bowhunters of Montana (TBM), formed as an offshoot of the Montana Bowhunters Association (MBA) in 1987, currently has nearly 200 members.

What makes the Treasure State a traditional bowhunting mecca? One reason may be that Montana's six-week archery season is one of the nation's longest, providing the

many days afield needed to hunt successfully with traditional weapons. Also, many of country's most highly regarded bowyers live here, including Dick Robertson in Lewistown and Dan Toelke in Ronan. It also may be that Montana's ruggedness and rural character attract many of the same people who enjoy the challenge of mastering this difficult form of hunting.

In 2021, FWP sold 218,000 hunting licenses, including 58,000 archery permits, a dramatic increase over the previous decade. Approximately 10 percent of deer and elk shot in Montana were taken with bows, although FWP data do not distinguish among various types. Because bowhunting requires hunters to stalk much closer to their prey—20 to 60 yards depending on the bow type, compared to 200 yards or farther for a rifle—archers on average have lower hunting success rates.

Though compound bows shoot farther than traditional bows and are easier to master, the older styles offer some practical advantages of their own. They are light and easy to carry. Shot quickly and instinctively, they do not depend on sights, release aids, or rangefinders for accuracy. They require little maintenance, and almost nothing can go wrong with them in the field. They also encourage hunters to develop skills like tracking and close-range stalking, providing intimate views of their prey and insights into animal behavior.

Still, traditional bows are not for everyone. Hunting with a longbow or recurve requires time, patience, and, above all, willingness to return from the field empty-handed. The rewards lie elsewhere. 

BACK TO BASICS: MUZZLELOADERS

Hunting big game animals with firearms similar to what Lewis and Clark carried more than two centuries ago.

By Jack Ballard



NEW BUT OLD A modern inline muzzleloader. Though equipped with an adjustable stock, scope, and internal ignition system, the rifle is still loaded by pouring gunpowder into the muzzle, just like firearms used 250 years ago.

Most people who recreate outdoors seek to use the most technologically advanced gear available—graphite or boron rods for fly anglers, rocker camber skis for downhillers, electronic drivetrains for mountain bikers. Rare is the skier who uses wood skis attached to leather boots or a tennis player who swings a wood racket strung with dried animal gut.

But a small-but-growing cadre of hunters delight in using old-technology muzzleloader rifles that were already considered “relics” as far back as the mid-1800s, when breech-loading firearms became available. Today, thousands of hunters across the United States take to the field each season with firearms that require the shooter to pour the propellant (blackpowder) and drop the projectile (lead ball or slug) into the rifle, muzzle first, then pack both in with a ramrod each time they want to take a single shot.

Writer Jack Ballard of Red Lodge is a frequent contributor to Montana Outdoors.

Why on earth would someone go through all that bother when they could load one bullet after another into the chamber with a slight wrist movement on a modern bolt-action rifle?

My sentiments exactly—until I learned the pleasures of blackpowder rifle hunting.

It all started in 2000 when I won a .50 caliber muzzleloader rifle in a photo contest. At the time, I had no interest in the contraption, so I stashed it in a closet with thoughts of selling it someday at a garage sale.

Then, three years later, a friend con-

vinced me we ought to hunt whitetails in Idaho’s late-season muzzleloader season. Many states hold special hunts before or after the regular firearms season, open only to hunters using “blackpowder” (muzzle-loading) guns. I dug my rifle from the closet, studied the owner’s manual, put it together, and bought a few other accessories necessary for firing. Our Idaho adventure never came together, but the next year I stalked within 80 yards of a Montana pronghorn buck and felled it with a single shot from my blackpowder rifle. The following season I killed another pronghorn buck, a bull elk, and a mule deer buck with the muzzleloader.

Back then, Treasure State hunters mostly deployed muzzleloaders for the novelty and challenge of using a short-range gun not much different from the flintlock rifles carried by Lewis and Clark or Revolutionary War soldiers. But nowadays, muzzleloaders have access to areas off-limits to centerfire rifles—Montana’s special Weapons Restricted Areas (WRAs) during the regular big game rifle season—and they can also hunt



A traditional percussion cap version with its external, indirect ignition system.

for nine days during the mid-December Muzzleloader Heritage Season (MHS), enacted through state legislation in 2021. As a result, more and more hunters are looking at blackpowder guns in a new light.

INDIRECT AND DIRECT IGNITION

Broadly speaking, there are two types of muzzleloaders: traditional and modern. Both are legal on WRAs, but only the traditional style can be used during the MHS. Both versions are loaded with powder and a projectile from the barrel, but differ in how the gunpowder is ignited.

With a traditional muzzleloader, an exposed hammer above the trigger strikes a “percussion cap” that ignites a spark that, through a hole, sets off the main charge of blackpowder (or powder substitute, like loose pyrodex) inside the rifle breech.

An even older version of indirect ignition is the “flintlock,” in which the shooter pulls the trigger to release a hammer holding a chunk of flint that strikes a piece of steel that creates a shower of sparks, igniting a small load of powder in a tiny “pan.” That flame then enters the breech through a small hole and ignites the powder, propelling the projectile out through the barrel.

With modern inline muzzleloaders, which most blackpowder hunters use these days, a percussion cap or primer is loaded directly into the breech and ignited with the strike of the rifle’s firing pin, allowing direct

“inline” ignition of the powder charge.

All versions of muzzleloaders differ from modern centerfire rifles, used by most firearms hunters, which fire a finger-size brass cartridge with primer, powder, and lead or copper bullet in one package.

Muzzleloader hunters who use indirect ignition methods revel in the challenge of employing centuries-old technology, open sights, and traditional lead balls. Most inline muzzleloader hunters try to modernize their gear to the extent the law allows, adding scopes and using projectiles that spin and add range. Other than having to load the powder and bullet from the muzzle, inline versions operate much like a regular rifle.

Another difference between traditional and modern muzzleloaders is their lethal range. A traditional muzzleloader legal for Montana’s heritage season is effective out to about 100 yards, while an inline version outfitted for use in WRAs or general season hunting may be lethal to 200 yards or beyond. I’ve dropped antelope and mule deer with one shot at 220 yards with .45 and .50 caliber inlines outfitted with fiber-optic sights.

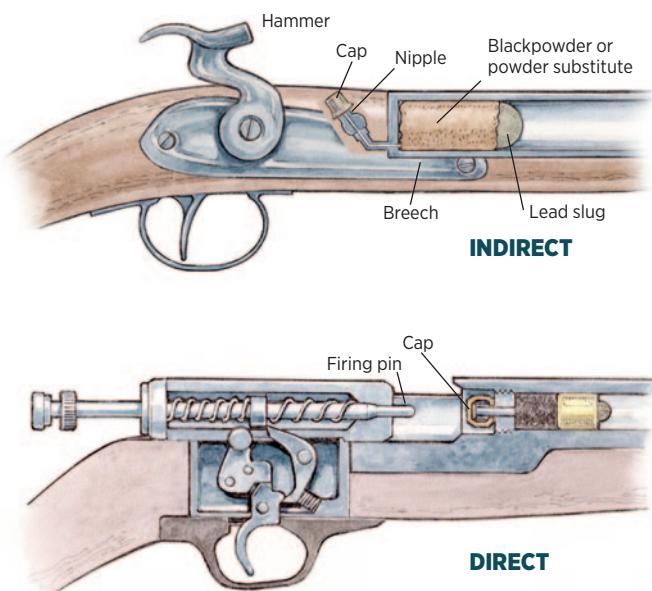
SLUGGING IT OUT

Before the centerfire rifle was invented, hunters used muzzleloaders to kill elk, bison, moose, and even grizzly bears. Much of the gun’s “knockdown power” comes from the weight and diameter of the slug or ball. In a .50 caliber model, slugs generally

weigh 300 to 350 grains, twice that of a bullet in a .30-06 rifle used by many big game hunters today. Although the bullet from a muzzleloader travels slower, its weight gives it devastating momentum. Slugs from muzzleloaders don’t expand on impact like high-velocity bullets from a centerfire rifle do. They don’t have to. A .50 caliber half-inch slug already has a larger diameter than what most standard-caliber bullets from a centerfire rifle achieve on expansion.

The elk, mule deer, pronghorn, whitetails, and mountain goat I’ve killed with a muzzleloader died as quickly and humanely as had I been using a typical modern hunting rifle. Of all the things to consider when contemplating a muzzleloader rifle, knockdown power should not be a concern—as long as you stay within the effective shooting range.

But projectile regulations and choices do affect a muzzleloader’s accuracy and effectiveness in various Montana hunting applications. Round balls of lead enclosed in cloth patches represent the oldest form of muzzleloading projectiles. They will efficiently dispatch a deer but aren’t sufficiently accurate for hunting at much beyond 50 yards. Plain lead bullets are a step up from round balls. I can routinely hit a CD-size target at 100 yards with my traditional .50 caliber muzzleloader loaded with 385-grain Hornady Great Plains bullets. Both round balls and plain lead bullets are legal during the MHS.



Muzzleloader Ignition Systems

With an **indirect ignition system**, a percussion cap containing a bit of gunpowder is placed on a metal nipple on the outside of the breech. The hammer hits the cap, causing a spark that, through a hole in the nipple and then a valve going to the breech, ignites the main charge of gunpowder.

Flintlock rifles (not shown) are even more complicated. A chunk of flint on the hammer hits a piece of steel that creates a spark, igniting a teaspoon of powder on a pan, causing a large flash that ignites the main gunpowder charge within the breech.

With a **direct ignition system** (inline muzzleloader), a firing cap is loaded into the breech. When the firing pin strikes the cap, it ignites the gunpowder. The main difference between an inline muzzleloader and a modern centerfire rifle is that, with the latter, the cap, powder, and bullet are all encased in a brass cartridge loaded directly into the breech.

To get maximum performance with a muzzleloader, shooters use “gas-check” bullets (which have copper or plastic seals on the base) or they fire sabots (bullets enclosed in a plastic casing that spins the projectiles like a spiral-thrown football). Note that gas-checks are not legal during Montana’s MHS.

EXTRA PRECAUTIONS

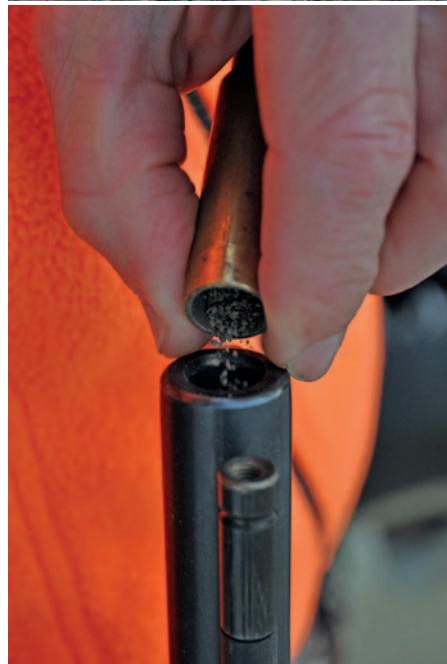
All firearms require careful use and handling, and muzzleloaders are no exception. One error all muzzleloaders take pains to avoid is “double-loading.” That means the shooter forgets they’ve already put the powder and slug in the barrel and repeats the process. This can cause the barrel to burst when the rifle is fired, causing severe injury to the user. Tip: Before loading, always check how far the ramrod can be inserted in the barrel to see if there’s another load already down there.

Other serious accidents can occur when muzzleloaders are loaded with “smokeless” powder (the kind used in centerfire rifle cartridges). Smokeless powder creates far more pressure than blackpowder and can cause the barrel on a muzzleloader to rupture. Smokeless powder is illegal for muzzleloader hunting during the MHS. I’d advise against using it during other times, too.

When loaded and handled properly, muzzleloaders are as safe as any firearm. Along with the steps outlined by manufacturers and hunter safety courses, I take a few extra precautions when shooting these rifles.

First, I never load them with a maximum or “magnum” charge of powder. Loads at 80 to 90 percent of manufacturers’ maximum ratings for a particular rifle reduce stress on the barrel and other components. I find that these slightly reduced charges still produce accurate shots without much loss of velocity or range.

Second, I take extreme precautions when loading a blackpowder rifle to keep it pointed away from me or others. Experts also recommend grasping the ramrod with your fingers when loading a muzzleloader instead of forcing it down with the palm of the hand. In the extremely rare event of a misfire when loading, this procedure reduces the likelihood of the palm being pierced by the ramrod or bullet.



COMPLEX COMPONENTS Clockwise from top: Firing a modern inline muzzleloader; bullets can either be simple slugs, grooved slugs that spin like a football (increasing accuracy and distance), or projectiles in plastic casings that cause the bullet to spin; a traditional flintlock version; pouring a precise measure of blackpowder into the muzzle before inserting the slug and packing both down with a ramrod.

Hunting with or shooting a muzzleloader is more complicated and requires more technical expertise than using a centerfire rifle. But it’s a skill that can be easily learned.

CAN YOU MAKE A COOKIE?

I admit I was nervous about the two-part ignition system the first time I loaded and fired my photo contest muzzleloader. Aiming at a target about 50 yards away, I exhaled tentatively and squeezed the trigger. As I expected, the muzzleloader’s trademark gray smoke obscured the target, but the shot recoil was much milder than I expected. And there

on the target, at the upper right-hand corner of the paper, was a clean, round hole. It worked! It took some time to tweak the sights to where my shots clustered around the bull’s-eye, but I was hooked.

Since then, I’ve enjoyed the challenge of using blackpowder rifles and, especially, the additional hunting seasons and areas that using them provide. As for the complexity of the devices that many hunters find intimidating, let me put it this way: If you can follow the cookie recipe on the back of a bag of chocolate chips, you can load and fire a muzzleloader. 



SMOKING ALLOWED Both modern (shown here) and traditional muzzleloaders use blackpowder that smokes when ignited. Smokeless powder used in regular rifle cartridges is dangerous in blackpowder rifles because it creates so much pressure it can cause a muzzleloader barrel to rupture.

Seeing the open doors

By Tom Dickson

I'd like to think of myself as a strong, fit Montana man, a guy able to hike mountains and ford rivers and pack a bull elk out from the backcountry. But I'm not that guy and never have been.

I grew up relatively weak compared to kids my age, unable to do even one pullup until I was 15. When I finally started building muscle in my late teens and twenties, I injured my lower back and then struggled with chronic pain for decades. I had a hip replaced at age 54, but the new joint never really took. I also have sore knees, a partially clogged heart artery, shoulder arthritis, a condition causing my little finger on both hands to permanently curl, and, most

recently, a torn ankle tendon that kept me housebound most of this past summer.

Jeez, I'm only 64. What awaits me at 80?

I wouldn't call myself disabled, since stretches of health and wellness during the past two decades have allowed me to backpack, take multiday canoe trips, harvest a deer or two most falls, and even get in several full seasons of upland hunting.

But some years I struggle just to walk the dogs or wade-fish the Missouri.

These setbacks have given me a glimpse of what truly disabled people go through just to live their lives each day. They also provide me a different perspective on outdoor activity.

After dinner one evening this past summer, my wife and I drove up to MacDonald Pass to escape the heat. While she took our two dogs for a hike along the Continental Divide Trail, I waited in

the parking lot with my sore ankle. I spent the next hour watching nighthawks swooping over the field below me, making their distinctive *peent* calls. One curious male dove at me then veered off at the last second, making that strange mechanical boom noise as air rushed through his wing feathers.

I'd rather have been with Lisa on the trail, watching the dogs sniff for dusky grouse and chase ground squirrels. But I definitely enjoyed watching those graceful nighthawks, birds I wouldn't have noticed had I been more mobile.

"When one door closes another door opens," wrote Alexander Graham Bell.

We all eventually break down, even the sturdiest among us. We tear one thing or strain another or have this or that joint replaced.

Sometimes the repairs work, sometimes not. When they don't, we're left with no option but to adjust—in my case, fishing from a boat rather than wading, getting a buddy to help haul out my deer, hunting ducks from easy-to-access blinds. Or some seasons giving up hunting and fishing entirely and instead taking nature photos, kayaking, e-biking, reading, or just enjoying our state's world-class scenery from the road.

Not long ago, a colleague said he thought many hunters had grown "too lazy" to hike into the backcountry and haul out an elk. Maybe. Or maybe many, like me, just can't physically do that anymore, if they ever could.

Not all of us can be rugged backcountry types, especially as we grow older. But almost all of us, no matter how much our bodies deteriorate, still want to engage with the outdoors. My response is to try to stop moping over what I can't do and embrace all that I still can. But for many of us, shifting perspective like that is not easy.

Bell could have been describing me when he also wrote, "We so often look so long and so regretfully upon the closed door, that we do not see the ones which open for us." 

Tom Dickson is the Montana Outdoors editor.



Mourning Dove

Zenaida macroura

By Jim Pashby

September can still produce a few days with temperatures in the 90s. But during the first two weeks of the month, we almost always have a brief cold snap that sends many mourning doves and other thin-feathered birds south.

Though some mourning doves in the milder Flathead area stay in Montana year round, most skedaddle with those first chilly rains of late summer. They bunch up in flocks in late August and follow cold fronts to Texas and Mexico. That early migration reminds us that fall is right around the corner.

IDENTIFICATION

Almost everyone can ID a mourning dove by the male's sad-sounding coo, though the increasingly invasive Eurasian collared dove has a similar call that causes some confusion between the two species.

Roughly 12 inches long, both male and female mourning doves are robin-size with a small head and mostly plain gray coloration with black spots on the wings. The tail is slender and tapered, with white-tipped outer feathers.

Mourning doves often perch on telephone wires and forage for seeds on the ground. When taking flight, their wings make a sharp whistling sound as air rushes through the feathers. In flight, these birds move fast and bullet straight, wings often tucked tight against the body for speed.



SCIENTIFIC NAME

Zenaida was given in 1838 by French naturalist Charles Lucien Bonaparte to honor his wife, Zénaïde Laetitia Julie Bonaparte, Napoleon Bonaparte's niece. *Macroura* is Greek for "long tail."

FEEDING

Mourning doves are chow hounds, consuming roughly 12 to 20 percent of their body weight per day. When they find a mess of seeds on the ground, they'll scarf down as much as they can to fill their crop (throat pouch) before flying to a safe spot. There, they grind the seeds in their gizzard with grit they pick from roads to make the food digestible.

HABITATS

Mourning doves thrive in open or semi-open habitats, including farmlands, towns, road-sides, grasslands, forest clearings, and urban parks and neighborhoods. The only place you don't find them is in dense forest or high-mountain parks.

Because they tolerate brackish and alkaline water, they do well even in Montana's most arid regions.

life, both parents feed their chicks what's known as "crop milk" or "pigeon milk"—a nutrient-rich substance with a texture like cottage cheese secreted by cells in the crop, then regurgitated into a tasty meal for the baby doves, called squabs.

DRINKING

Mourning doves, along with the rest of the pigeon and dove family, are among the rare birds that can suck up liquid through their beak like a straw, instead of having to tilt their head back and let gravity do the work. The birds seem to pump their tongues like pistons to create a suction process like a vacuum pump, according to a scientific study that took X-ray videos of pigeons to figure out how they drink. This method lets doves drink quickly, lessening the time they are vulnerable to predators.

CONSERVATION

The mourning dove is the most widespread and abundant game bird in the United States. Though every year hunters harvest more than 20 million, the mourning dove remains one of the nation's most numerous birds, with a population estimated at 350 million.

Because Montana offers so many other game bird options, relatively few hunters here target doves when the season opens on September 1. Doves are fast and challenging to shoot, and their dark breast is delicious sautéed in butter or battered and deep fried. 



REPRODUCTION

Mourning doves construct flimsy nests of twigs woven into a loose pile, typically in trees or shrubs.

In Montana, these prolific breeders raise three to five broods in a single year (and even more in warmer states). The female lays two white eggs at a time, then trades off incubation duties with her partner for the two weeks it takes the eggs to hatch.

In the first few days of a mourning dove's

Jim Pashby is a writer in Helena.

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PHOTO BY DAVID RUMMANS



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